INSIDE: DOGS GO AFTER CATS, SCAT, AND GRIZZLIES

Montana Outdoors

JULY–AUGUST 2008

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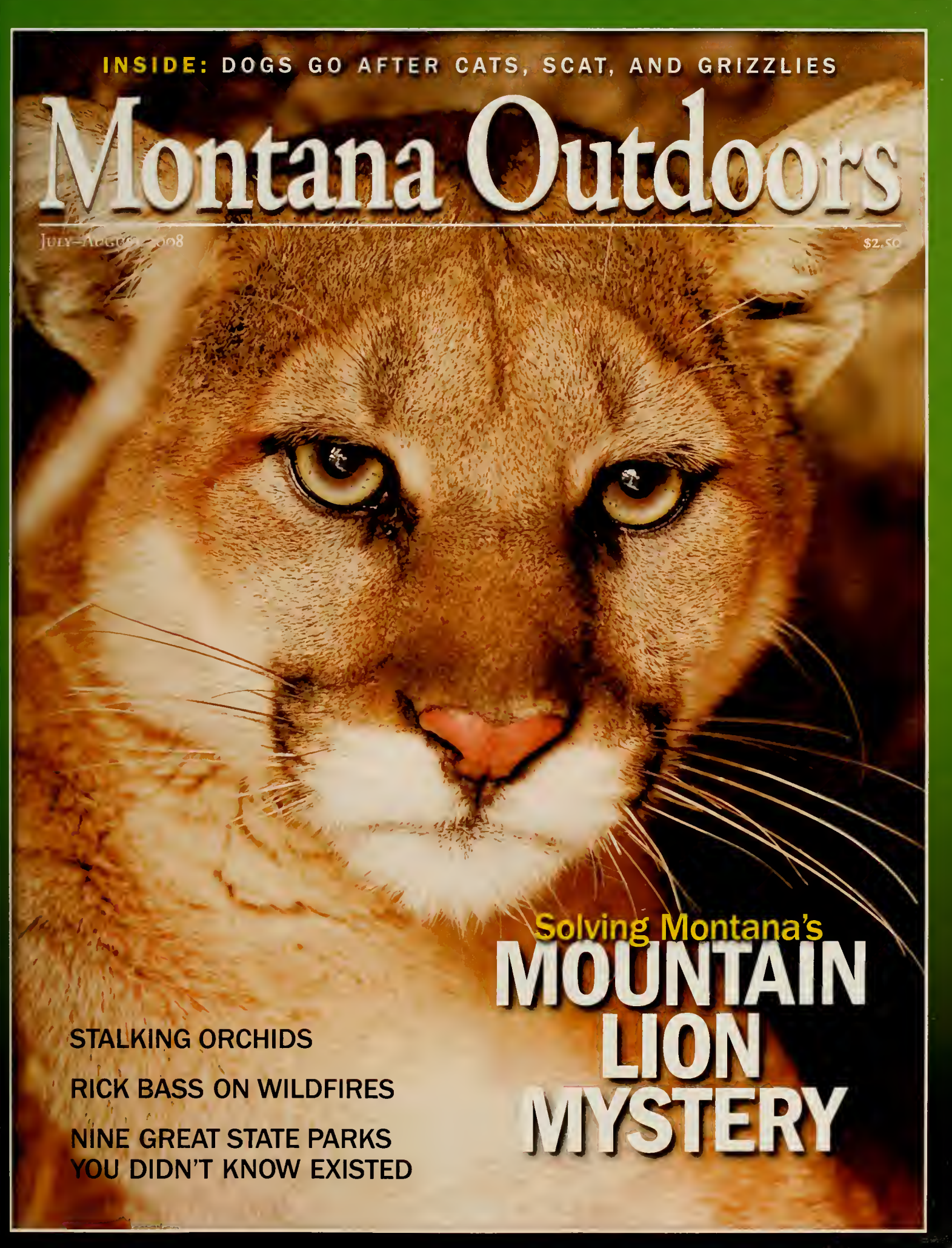

Solving Montana's MOUNTAIN LION MYSTERY

STALKING ORCHIDS

RICK BASS ON WILDFIRES

NINE GREAT STATE PARKS YOU DIDN'T KNOW EXISTED

Montana Fish, Wildlife & Parks

fwp.mt.gov

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Montana Outdoors

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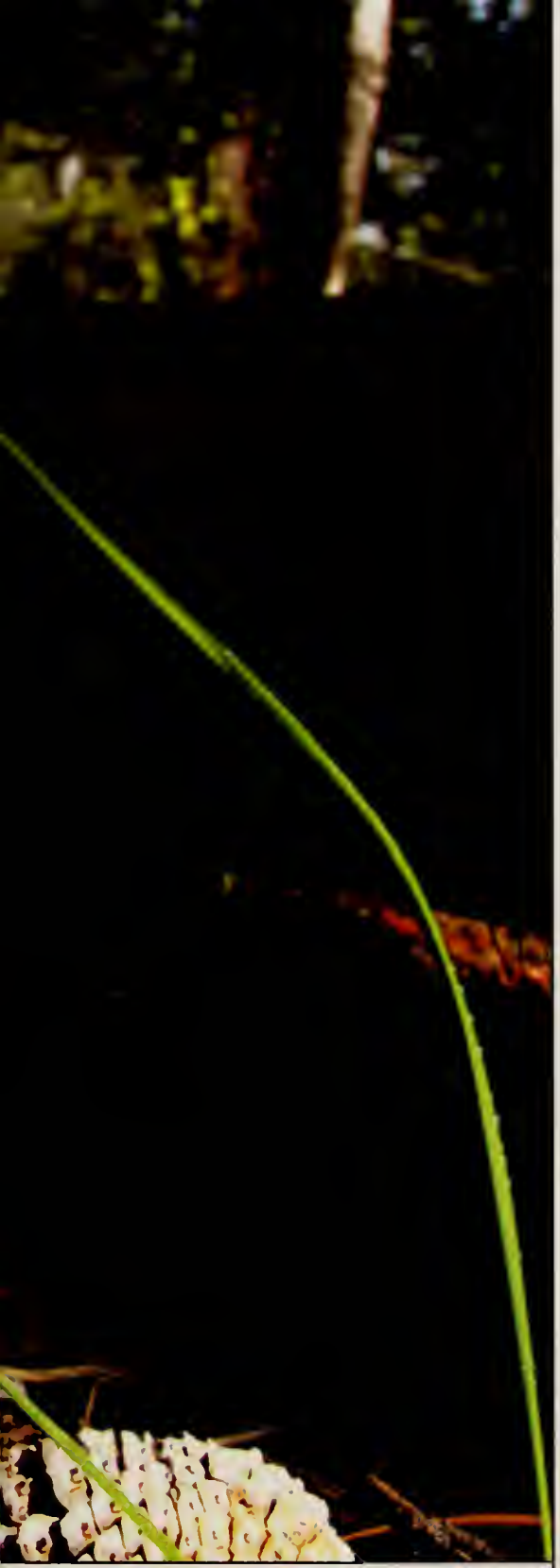


MONTANA GROWN Though usually considered a tropical plant, orchids such as the calypso occur in some parts of Montana. Follow one woman's search for the rarest of the rare on page 24. Photo by Jesse Varnado.

FRONT COVER Female mountain lion photographed in the wild. See page 10 for more on Montana lions. Photo by Kenton Rowe.

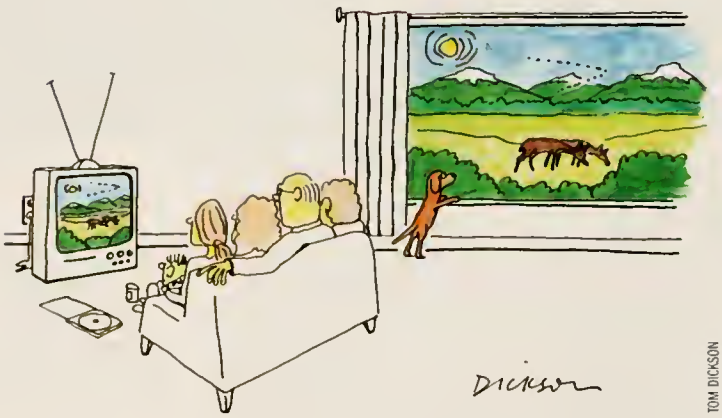
Beaver defender

"That Critter's Got To Go" (May–June) maligns the beaver as a nuisance and inappropriately adds credence to efforts to remove it from aquatic ecosystems. The beaver is a keystone species that creates habitat for a wealth of other species, including waterfowl, amphibians, otters, mink, and muskrats. Their ponds provide winter refuge and rearing habitat for westslope cutthroat and bull trout. Their foraging brings nutrients into the stream, benefiting biota of all trophic levels. Their ponds trap sediment and store water for overall watershed health. A recent Alberta study documented that beaver activity can increase open water up to nine times. The city of Lethbridge is enthusiastic that beaver activity can enhance city water supplies during drought periods.

Unfortunately, beaver trapping in Montana is regulated only by season length, with no stream-specific quotas to ensure that beavers are not exterminated from a drainage. When beaver pelt prices rise, beaver populations will once again suffer from overtrapping in many drainages. The quick fix advocated by your article is to remove beavers when roads and stream crossings are inappropriately placed in beaver habitat, or when beaver activity is in proximity to non-native ornamental trees. Roads can be relocated or modified to function with beavers present. Stream crossings can be made compatible with beaver activity. I have successfully wrapped many trees with old hog wire and have never seen beavers chew through or climb over properly placed wire. It is important to remember that the real problem is people invading habitat periodically occupied by beavers since glaciers receded from Montana.

I suggest that *Montana Outdoors* extol the virtues of beavers and provide techniques of coexisting with a species so important to other native wildlife and fish, as well as to stream health and downstream water supplies.

Greg Munther
Fisheries Scientist
Missoula



TOM DICKSON

Hi-Line lobster

I wholeheartedly disagree with Tom Dickson's viewpoint that burbot meat, once frozen and then thawed, becomes "rubbery and inedible" ("Montana Outdoors Portrait," May–June). In the 1970s and '80s, when I did a lot of ice fishing along the Hi-Line, we called this delicious fish "poor man's lobster." We often put fillets in the home freezer. Later the fish would be thawed, parboiled, then broiled in a glass baking dish smothered in butter until golden brown on top. The result was a gourmet dish, in looks, texture, and taste like that of a real lobster.

John L. Stoner
Townsend

Required preschool reading

Enclosed is a picture taken last September of my husband and our grandson, Boston. As you can see, Grandpa is getting Boston started on *Montana Outdoors* early. We used to live in northeastern Montana (Medicine Lake) and now live in Alaska, and have subscribed to your magazine all these years.

Alice Borg
Wrangell, AK

Quiet, please!

I can't begin to tell you how much I value and admire your publication. I've passed dozens of summers in Montana enjoying the scenery and wildlife your state has preserved for us all. Thank you, folks, for being there. Accordingly, it may seem strange that I choose to indulge in a bit of snippity criticism. But be assured that this is meant as an admirer and not hostile. To wit, the "Natural Wonders" sidebar in the May–June issue gave advice on being safe in griz country. I have always wondered about the unholy level of risk aversion rampant in America in recent decades. Without belaboring the matter, one statement in the sidebar—"Make lots of noise while walking"—is so common and stupid that it demands response. I cannot speak for the fearful city types who read your magazine, but for my part, I do not go into the wilderness to "make lots of noise while walking." I go there to listen to the natural sounds of the wild. Indeed, the less noise I make the better. And I can assure you that I would avoid like the plague areas where city types pretending to experience the wilderness poke along blasting the silence in fear of encountering the essence of the wilderness.

I love you guys, but you should be ashamed and embarrassed for printing, and thus encouraging, such trendy garbage. When you go into grizzly country, you accept it on its terms. If you want otherwise, I suggest you go to the local zoo; it's safe there. But please do not pollute the wilderness with your noise.

Louis Lavoie
Plymouth, MN

Correction

Many readers pointed out that the cataracts depicted on page 5 of the May–June issue are Kootenai Falls and not Thompson Falls, which have been inundated by Thompson Falls Dam since 1915.

IT TAKES A DEPARTMENT

During my occasional travels outside the state, I often get compliments on this department and its management of trout, elk, wolves, grizzlies, and other fish and wildlife and our state parks. Much of that credit goes to our biologists, park managers, game wardens, and the FWP commission. But just as important are all the people who work for FWP behind the scenes.

MONTANA OUTDOORS

Montana sees an overwhelming amount of outdoors recreation. For example, our state parks and fishing access sites receive 5.4 million visits each year. The Parks Division's maintenance crews keep those sites clean, safe, and inviting. Montana receives over 2.5 million "hunter use days" each year. Hunters may not be familiar with the role wildlife technicians play in collecting information used to monitor populations and set seasons. Or the Enforcement Division staff who process TIP-MONT calls. Or the Block Management staff who work with landowners to set up pubic hunting opportunities on private land.

Montana also receives 2.8 million "angler use days" each year. Supporting all that recreation are fisheries technicians and field workers who assist biologists in keeping fish populations healthy, and crews at FWP's ten fish hatcheries who rear and stock fish in 500 lakes and reservoirs.

FWP processes 265,000 applications each year, ranging from nonresident big game combo licenses to permits for the Smith River float. Making sure those licenses and permits are allocated fairly and quickly requires close coordination among our Licensing Bureau, Application Development Bureau (which manages the on-line licensing), and the staff at the front desk of our headquarters and regional offices.

The Information Management Bureau manages the FWP website and maintains GIS data essential for the scientific management of fish, wildlife, and parks. Among other duties, the Field Services Bureau manages acquisition of conservation easements and new fee title lands (such as wildlife management areas). There's also a communications and education crew that produces this magazine, along with the hunting and fishing regulations, TV reports, and hunter and youth education programs. Also out of the public eye are essential internal staff such as computer support specialists, accountants, property management crews, rimeroll clerks, and federal projects coordinators, as well as our Legal Unit and Human Resources Bureau.

Equally essential are our clerical staff and other members of the administrative support teams. I can assure you that without them this department would cease to function.

Most of our staff are spread across Montana. In fact, 75 percent of FWP personnel work in the field, outside of the central Helena headquarters. Also found statewide are the many volunteers who help this department. Roughly 1,500 people donate their time each year to be hunter education instructors. Other volunteers serve on regional citizen advisory councils and other boards and steering committees that guide our activities and shape policies. Also essential are hundreds of not-for-profit organizations, professional associations, and land conservation groups, as well as local, county, state, and federal associations and other public agencies.

And I can't forget the hunters and anglers whose license fees and federal excise taxes pay for most of the work this department does, nor the Montana vehicle owners who support our Parks Division.

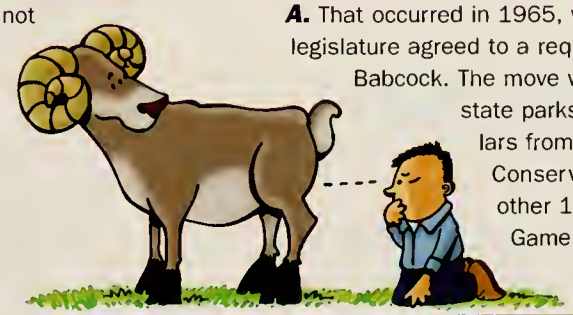
There is no feasible way to acknowledge all the individuals who contribute to the department's daily activities and accomplishments. But I wish there were. As proud as I am of everything this department and our partners accomplish, I'm even prouder of the people who make it happen.

—M. Jeff Hagener,
Director, Montana Fish, Wildlife & Parks

NATURAL WONDERS
ILLUSTRATION BY PETER GROSSHAUSER

***Q.** While hunting bighorn sheep ewes last fall, I had a hard time telling them apart from young rams, which also have short horns. What's the best way to distinguish the two?*

A. The best way to make a positive ID and not illegally shoot a ram is to check for what biologists call "evidence of sex." In summer, the two are nearly indistinguishable. But by fall, all young males have testicles clearly visible from behind. Other methods, such as comparing the horn base (those on females are sightly narrower), are much less reliable.



***Q.** When I was a girl, state parks were run by what was then called the State Highway Commission. When did they join the Fish and Game Department?*

A. That occurred in 1965, when the Montana legislature agreed to a request from Governor Tim Babcock. The move was a prerequisite for state parks to receive federal dollars from the Land and Water Conservation Fund. It took another 12 years before Fish and Game changed its name to Fish, Wildlife & Parks.

A partnership (and money) for nongame conservation

HOARY MARMOT BY USFWS

It is not surprising that a state famous for trout and elk has not paid much attention to the conservation of Coeur d'Alene salamanders, olive-sided flycatchers, pygmy rabbits, sicklefin chubs, and other nongame species and their habitats. But as public interest in conserving all key Montana wildlife species continues to grow, that neglect is beginning to change.

A major step came recently with the formation of the Montana Conservation and Restoration Partnership. The group was created to find new ways to fund, carry out, and publicize Montana's recently completed comprehensive fish and wildlife management plan. The plan was produced in 2006, when FWP worked with other partners to draft the 300-page document. It identifies 60 nongame fish and wildlife species in most need of conservation and the specific native landscapes where the animals live. Congress had directed each state to produce a comprehensive plan in order to qualify for millions of dollars in federal matching grants for new nongame fish and wildlife conservation activities.

The partnership was formed following a workshop sponsored last year by FWP and members of the Montana land trust community. More than 140 people representing industries, conservation groups, agriculture, county governments, and state and federal agencies attended. The agenda included a day-long session on the comprehensive plan. At the end of the session, participants decided that Montana's comprehensive fish and wildlife management needed more funding, more coordination, locally based leadership, and better communication among conservation and restoration organizations and agencies. Also essential: a steering committee or partnership to coordinate activities.

"In response to that last recommendation, we began working with the Montana Association of Land Trusts and The Nature Conservancy to establish the Montana Conservation and Restoration Partnership," says FWP Field Services Division chief Paul Sihler, who works closely with various Montana land trusts. The partnership formed a steering committee of people representing groups ranging from Trout Unlimited and The Nature Conservancy (TNC) to the Montana Stockgrowers Association and the Montana Petroleum Association. "We tried to get a cross section of groups with a stake in how Montana's fish, wildlife, and habitats are managed," Sihler says.

The aim of Montana's comprehensive fish and wildlife plan, approved by the U.S. Fish and Wildlife Service in 2007, is to keep nongame species such as the common loon and meadow jumping mouse off the federal endangered species list. To accomplish that, partnership members envision conserving the animals' habitats as soon as possible, before Montana's skyrocketing property values make the land unaffordable.

A major boost to that goal came in April, when the Doris Duke Charitable Foundation donated $13 million to TNC for conserving fish and wildlife habitat in the Rocky Mountains. At least $2 million is slated to help Montana carry out its comprehensive plan, while the rest is for similar work in Wyoming, Colorado, New Mexico, and Arizona. Most of the funds are for wildlife habitat conservation; the rest will go to public education and partnership building.

Kat Imhoff, director of The Nature Conservancy of Montana, says her organization will work closely with FWP and other members of the new Montana Conservation and Restoration Partnership to acquire conservation easements from willing landowners. Top priority landscapes, as identified in the state's comprehensive plan, include the Swan Valley, northern

30 years ago in *Montana Outdoors*

The 1978 July–August issue featured an editorial by agency director Robert Wambach calling for an end to federal intervention in state fish and wildlife management policies. The magazine also ran stories on white-tailed deer, burrowing owls, and two brand-new state parks: Salmon Lake and Placid Lake.

prairies, Flathead River, Rocky Mountain Front, and Mullan Pass near Helena. FWP is also working in other areas of the state to conserve critical habitats. Imhoff says TNC plans to work and share funds with the Trust for Public Land, Prickly Pear Land Trust, Conservation Fund, and Flathead Land Trust. In turn, these groups will work with local and state partners to purchase conservation easements and lands.

Jeff Hagener, FWP director, says the combination of the grants and the new partnership will allow Montana to begin carrying out specific conservation actions identified in the comprehensive plan. "The timing of the grants and the partnership could not have been better," he says.

Free FWP videos and movies now on-line

Watch spectacular wildlife footage, compelling stories, and wildlife identification guides on-line at the new FWP video library. The library contains six movies (including the popular, award-winning *No Need for a Saturday Night*), more than 100 news reports, and other streamed video. Recent news reports include "Tiger Muskie," "Taxidermy," "Milltown Dam Removal," and "Wolverine."

QuickTime

To access the FWP video library, visit the department's website at fwp.mt.gov and click on the icon at the bottom of the home page.

The streaming video library is maintained and supported by the Montana Office of Public Instruction. Accessing the library requires a free download of QuickTime for viewing.

A pond runs through it

FWP will pay to put a kids' fishing pond in your community. The Community Pond Program, established in 2003, provides funds to design, build, repair, and enhance basins to create easy fishing access for kids.

In Whitehall, the Jefferson Valley Sportsmen Association coordinated work on a pond that provides recreation for kids from throughout the area. A local gravel contractor donated the property and excavated the basin. Volunteers built a parking lot, a restroom, picnic areas, and a gravel trail encircling the pond. "It's not uncommon to see 20 or more kids using the pond on a given Saturday," says club member Joe Dillon. He adds that plans are in the works to pave the parking lot and build a wheelchair-accessible fishing pier. The club is supplementing the FWP funds with other state, federal, and private grants.

In Hamilton, the local Trout Unlimited chapter worked with the city to improve access to Hieronymus Pond and install a device that keeps the water open year-round, preventing fish winterkill. The city of Missoula used the FWP funds to improve Silver Lagoon in McCormick Park by deepening the pond, installing a clay liner that increases water retention, and adding an island bridge for additional access.

ISTOCKPHOTO

Many adult anglers learned to fish as a child, when a parent or friend took them to the shores of a pond or lake.

Although many Montana towns sit on a stream or river, it can be difficult and even dangerous for youngsters to fish moving water. It's far easier for kids to learn to fish at ponds, which can be stocked with hungry hatchery fish. Many adult anglers say they were first introduced to fishing by a parent, relative, or friend at a local fishing pond.

To apply for community pond funds, visit the FWP website at fwp.mt.gov and look on the Habitat page for the Community Pond Program fact sheet and grant application form. Or call (406) 444-2449. FWP encourages all applicants to work with their local fisheries biologist on planning the project.

New historical signs at Giant Springs

A visit to Giant Springs State Park in Great Falls recently became even more educational. The park installed 22 new interpretive panels that replaced older versions containing outdated information. Half the money for the project came from the National Park Service, and FWP contributed the rest. "It's important that the park's rich human history and natural history are interpreted correctly," says Chris Dantic, FWP Parks Division interpretive specialist for north-central Montana.

Dantic says he's particularly excited about signs that tell the story of the Montana Silver Smelter, which was built on land that later became the state park. "It was the first private smelter in Montana. Park visitors can now visit the site where it stood, learn about the history of smelting in Great Falls, and see remnants of the blast furnace and a retaining wall, as well as the roaster stack base," he says.

MONTANA FWP

WATCH A CAT TO UNDERSTAND COUGARS

House cat behavior provides clues to what a mountain lion might do in the wild. **BY DIANE TIPTON**

Safety in mountain lion country comes from understanding mountain lion behavior, says FWP wildlife biologist Rich DeSimone, who has intensively studied the big cats over the past decade. "Most people in Montana have never seen a mountain lion, and those who have say their biggest fear was the unknown," says DeSimone. "But it turns out that many people may know more about lions than they realize."

How's that?

Mountain lions share many behaviors and physical features with ordinary house cats. Though the similarities shouldn't be overstated—after all, a lion is a large, powerful wild animal—DeSimone says people can learn much about mountain lions, or cougars, by watching their pet cat. "Predatory behavior is remarkably similar in wild and domestic felines," he says. "When it comes to staying safe in a lion encounter, knowledge is power. A good way to gain that knowledge is to watch how house cats behave."

According to Steve Torres, nationally known mountain lion biologist and author of *Lion Sense*, and Toni Ruth, mountain lion research scientist at the Selway Institute in Idaho, domestic cat owners probably have seen and interpreted many feline behaviors also demonstrated by cougars. Pet owners learn to read their animal's body language and behavior. Torres, Ruth, and DeSimone say those observations could help people prevent an attack if they ever encounter a cougar:

House cat observation: When introduced to a toy, a house cat intensely stares at the object, ears up and forward. It may follow the toy as it moves across the room and then hide suddenly, continuing the intense observation.

What that may tell you about lions: Like house cats, cougars are curious. They like to check things out and will often take their time determining if something is prey or just something to play with. A curious mountain lion is not necessarily a risk to humans.

House cat observation: When you interrupt a house cat stalking a bird, it suddenly straightens up, looks around, and pretends indifference at being found out. When you leave, it resumes pursuing the prey.

What that may tell you about lions: All cats, whether tame or wild, are stalkers; they want to remain hidden so they can sneak close to their prey. Let a mountain lion know you see it stalking you. Once detected, a cougar will usually abandon the hunt.

House cat observation: If a house cat sees a tiny dog, it will crouch low, tail twitching, to check out the newcomer. If the dog does not run but makes direct eye contact, emphasized by a few assertive barks, the house cat will likely realize the animal isn't prey and move away.

What that may tell you about lions: A potential prey's size, apparent vulnerability, and "positioning" influence a lion's response. Show a lion you are not prey by making direct eye contact—the opposite advice concerning bears. Stand your ground and don't slink away. Hold your jacket out wide or bring others in the group together to make as large an impression as possible, and make lots of noise.

House cat observation: When a house cat decides to attack a toy, it stares intently at the prey, crouches down—tail twitching, eyes narrowed, ears flattened—and prepares to pounce. When its rear legs start pumping, an attack is imminent.

What that may tell you about lions: If a cougar is crouched with its tail twitching and its rear legs begin pumping, you may have only a few seconds before it attacks. Yell directly at the cat and throw sticks or rocks. If it attacks, try to remain standing, facing the cougar so it can't bite the back of your neck. Fight back with all your might, striking it in the muzzle and eyes with your fists.

The odds are miniscule that you'll need to do this. Mountain lion sightings are rare and attacks even rarer. Over the past 100 years, lions have killed only 12 people in the entire United States. The last fatality in Montana was in 1989.

Seeing a mountain lion in the wild is a great thrill, one sure to get your heart racing. You will be more likely to relish this rare experience without incident if you take time now to study feline behavior, including that of house cats, and learn all you can about the habits of Montana's mountain lions.

Observing how house cats play may help you prevent a lion attack.

ISTOCKPHOTO.COM

Diane Tipton is FWP's statewide information officer.

Turn to page 10 to learn about a recently completed ten-year research project on Montana mountain lion biology and ecology.

LUKE DURAN/MONTANA OUTDOORS

Fill up on fun

Gas prices got you down? Stay in Montana this summer and visit a state park close to home. A sample of events:

CSI: MONTANA

Salmon Lake State Park, Friday nights, 8 p.m., all summer. Learn how game wardens catch poachers, where Milltown Dam went, how to geocache, when to hike the Continental Divide trail, and more at a series of one-hour Saturday night talks. Call (406) 677-6804.

SHAKESPEARE IN THE BADLANDS

Makoshika State Park, July 17, 7 p.m. The tragedy of *Macbeth* will seem even more dramatic when viewed amid the eerie limestone formations of this eastern Montana park. Witches, ghosts, blood, and treachery—parental discretion advised. Call (406) 377-6256.

GHOST TOWN BLOCK PARTY

Bannack State Park, July 19-20. Bannack Days is a Montana family tradition featuring gunfights, stagecoach robberies, old-time music, and traditional crafts. Great food and lots of activities for kids and adults, including panning for gold. Call (406) 834-3413.

CAROL POLICH

COME HITHER Visitors enjoy Shakespeare in the Park in Makoshika's natural amphitheater. This year the troupe performs the tragedy *Macbeth*.

ATLATL LESSONS

First Peoples Buffalo Jump State Park (formerly Ulm Pishkun), September, various dates. Before the invention of the gun or the bow, early American Indians used this device to kill large animals at distances of up to 20 yards. Learn how to work this remarkable weapon at two events: the 20th annual Montana Atlatl Mammoth Hunt, September 6-7, and the First Peoples Buffalo Jump State Park Atlatl Event, September 19–21. Instruction by members of the World Atlatl Association. Competition in youth, men's, and women's categories. Call (406) 866-2217.

OVER THE CAVERNS

Lewis and Clark Caverns State Park, various dates and times. This famous park is best known for its underground wonders, but in summer it has plenty of attractions aboveground, too. The park sponsors Friday night campfire programs, Tuesday night naturalist talks, and Saturday wildflower walks. Friday, August 29, is the third annual Caverns Stargazing Campout. Come learn about Montana's summer night skies from an expert astronomer. Call (406) 287-3541.

GREAT TALKS AT THE GREAT FALLS

Giant Springs State Park, various dates and times. Throughout the summer, interpretive specialists will give talks on native plants, American Indian history, explorers, settlers, the Great Falls, and more. Programs are set for Friday mornings, early Saturday afternoons, and Wednesdays at noon. Sunday programs for kids cover topics ranging from wild animals to poisonous plants. Call (406) 454-5870, 727-1212, or 454-5858.

THE MAKING OF MONTANA

Missouri Headwaters State Park, Saturday evenings, 7 p.m. The Making of Montana is the theme of this year's summer speaker series and marshmallow roast social. Speakers will talk about the people who first inhabited and settled Montana: American Indians, trappers, pioneers, settlers, the women of Bozeman Pass, and more. After the talk, celebrate summer with the popular marshmallow roast. The park will provide marshmallows and lemonade. All you need is a blanket or lawn chair to sit on. Call (406) 994-6934.

What's happening at your local state park this summer? Find out on-line at fwp.mt.gov/parks.

Photographer **Juan de Santa Anna** was driving home to Seeley Lake from southern California, where he had been visiting his mother. During the night, as he passed through Utah then Idaho, he considered relocating to be closer to her. It was a troubling thought, because he hated the crowds, traffic, and clutter of urban life. And yet there was that feeling of filial obligation. A few miles past Dillon, Montana, he looked east and saw the sun climbing over the Ruby Range as a sprinkler filled the air with mist. He pulled over and set his camera on a fence post. "That scene captured so much of what Montana is about, why I love this place," says de Santa Anna, who is originally from Venezuela. "Right then I said to myself, 'Sorry, Mom.'" ■

A CLOSE LOOK AT

What a ten-year study uncovered about cougars, their kittens, and the effects of heavy hunting pressure

By Sam Curtis and Tom Dickson

In the late 1990s, a small group of Montanans demanded that Fish, Wildlife & Parks reduce the annual harvest of mountain lions, or cougars. They said hunters were killing too many lions, and if the department didn't lower harvest quotas, populations in many areas would rapidly decline.

Unlikely as it might seem, the assertions did not come from antihunting groups, but rather from the lion hunters themselves (known as houndsmen for the dogs they use to chase and tree the big cats). "Houndsmen have a better idea of what's going on with the cat population than anyone, because they're out there chasing them day in and day out," says longtime houndsman Grover Hedrick of Boulder. "In the Bitterroot, as an example, the cats got shot down to about nothing. And all those houndsmen down there drove clear to Helena to say, 'Hey, we don't have any cats left.'"

Long considered a threat to livestock and public safety, cougars were subject to indiscriminate killing for most of Montana's history. Until 1962, the state paid a bounty on each lion killed. But as lion numbers dwindled, the state sought to protect more females and increase reproduction. In 1971, lions were classified as game animals, giving them protection with hunting seasons and harvest quotas. Under regulated seasons, lion numbers grew, helped along by growing populations of deer and elk in the predator's mostly mountainous range of western Montana.

Lion sightings soon increased—in the backcountry and in backyards. In 1989, a lion killed a five-year-old child playing outside the family home, 20 miles north of Missoula. The following year, a youngster was mauled by a cougar in Glacier National Park. From 1990 to 1993, FWP received 77 calls from people in northwestern Montana who felt threatened by lions. Many deer and elk hunters chimed in too, claiming that lions were depleting big game populations.

"FWP was at a loss for what to do," says Rich DeSimone, an FWP wildlife biologist in Helena. "So the department began increasing harvest quotas. We went from a harvest of 159 lions in 1988 to 776 in 1998. That's the highest number ever harvested in one state as a game animal."

WILD MOUNTAIN LIONS BY KENTON ROWE

AWASH IN DATA A lion cleans her three-week-old kitten in a den near Helena. A recently completed FWP research project looked at how hunting affected lions of various ages. It also compiled extensive biological information such as the number of kittens per litter, age of first reproduction, and intervals between births.

MOUNTAIN LIONS

Many houndsmen were furious over the high harvest. They maintained that lions were disappearing and quotas should be lowered, not raised. Yet homeowners continued to call FWP with reports of lions in their yards. Department officials found themselves pinned between two sources of conflicting information, not a place they like to be.

> **"At one time, people thought you couldn't really overhunt mountain lions..."**

How many to harvest?

One of the most perplexing challenges facing wildlife managers is to figure out how many game animals can be killed each year by hunters—and what seasons, limits, and other regulations to set for obtaining that result. If managers are too conservative, some hunters may lose recreational opportunities and the wildlife population may expand too much. Yet overly liberal regulations may remove too many animals from a population and slow recovery.

To determine the appropriate harvest, wildlife managers need to know how many game animals inhabit a hunting area or, lacking that information, whether numbers are rising, falling, or remaining stable from year to year (know as population trends). A rising population can withstand more hunting; a falling population usually means a lower harvest is in order. Managers also need to know how removal of different ages and sexes affects a population. For example, harvesting females usually lowers a population more significantly than harvesting males. Without this population and harvest information, determining harvest objectives and quotas can be little more than throwing darts at a board.

FWP found itself with darts in hand during the 1990s as it tried to set harvest quotas for Montana's mountain lion populations. Not only was the lack of population data causing conflicts with houndsmen, it also left the state vulnerable to challenges by anti-hunters. Animal rights groups prevented a proposed lion hunting season in California when that state was unable to prove its annual harvest would not harm populations. And in Washington and Oregon, ballot initiatives outlawed using dogs for hunting lions. Without strong data showing that its regulated hunting seasons were compatible with healthy lion populations, Montana was similarly vulnerable.

Hunting for cougar information

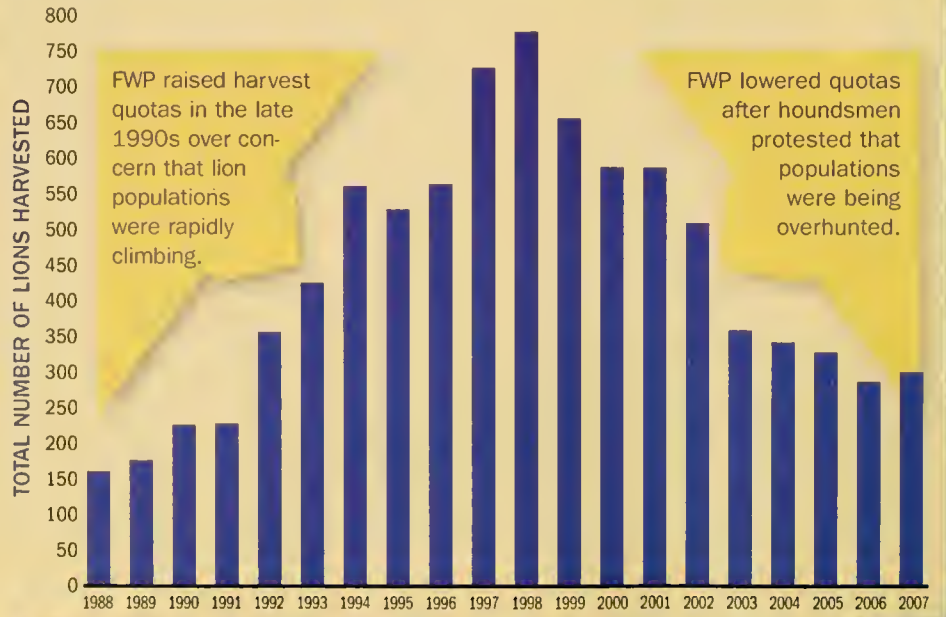
To gather that information, FWP in 1997 assigned DeSimone to a monumental ten-year mountain lion research project. The study had three main goals: determine how hunting affected lion populations, find ways to measure changes in lion abundance, and learn as much as possible about lion biology and ecology.

To begin its ground-breaking project, DeSimone's research team focused on the Blackfoot drainage east of Missoula, an area typical of hunted mountain lion habitat in Montana. Because they are secretive and elusive, cougars are notoriously difficult to locate. To determine the number of lions inhabiting the study area, DeSimone relied on cougar-finding experts. "We knew that houndsmen and their dogs are very efficient, and that if we hunted the resident lions day after day during winter, we could tree and radio-collar most of them," says DeSimone.

Over the next nine years, research team members captured and radio-collared 121 different lions (24 females, 11 males, and 86 kittens). Some collars contained GPS units

Sam Curtis is a writer living in Bozeman.
Tom Dickson is editor of Montana Outdoors.

MONTANA LION HARVEST 1988–2007 Widely varying harvests over the past two decades reflect FWP's lack of information about lion populations and the appropriate quotas to set in each region.



KENTON ROWE

that recorded a cat's location every five hours. Each week the team used airplanes to track the lions' movements and home ranges. They documented more than 46,000 different mountain lion locations and gathered extensive data on lion reproduction, mortality, dispersal, and population growth.

Because hunting was allowed in the study area, researchers could see how it affected population, age and sex ratios, and lion movement. DeSimone also compared the hunted population with an intensively studied population of nonhunted lions in New Mexico.

The crew evaluated ways to estimate lion population trends in specific areas. Because they knew exactly how many lions were in the study area, researchers compared the actual increase and decrease of the population each year with several "indirect" methods. One was a phone survey of houndsmen and deer hunters that asked if they saw lions while afield. Another counted the number of lion snow tracks in 150 miles of established winter routes, over which researchers covered 5,000 miles during five years. DeSimone and his team also monitored population trends of elk, mule deer, and white-tailed deer to determine if they corresponded to lion population trends.

The project made even greater gains after 2005, when researchers tested the effective-

CATCH AND RELEASE Houndsmen and their dogs corner a lion, which they allow to escape unharmed. Though some houndsmen pursue lions only for the chase, hunter pressure can increase enough to overharvest populations.

HUNTING CATS IS ALL ABOUT THE DOGS

I can hear the howls from a mile away. On this sunny summer day, I'm driving to a site near White Sulphur Springs where the Montana Houndsmen Association (MHA) is holding a field trial. I'm here to learn more about these interesting dogs and the men and women who train them.

The first thing I discover is that there are six types of hound: black-and-tan, bluetick, English (redtick), Plott hound, redbone hound, and treeing Walker. In other parts of the country, hunters use these dogs to chase raccoons or bears, but in Montana the hounds hunt cougars. Without dogs, it's nearly impossible for hunters to find, much less tree, a mountain lion.

The event I hear as I near the field trial site is the bear drag. In this event, dogs race cross-country after a bear scent–soaked skin dragged over a 1-mile course. Thirty-three hounds were released, and the first one that finds the lure wins.

While awaiting the finish, I talk to Skeeter Baertsch, 68, who is bouncing around the trial like a man half his age. He got started running hounds four years earlier, for the exercise and the excitement. "I had open heart surgery this past winter," says Baertsch, who lives in Helena. "The doctor said I'm doing great and to keep doing what I'm doing. So that's why I'm here."

KENTON ROWE

WIN BY A NOSE Field trials give hounds a chance to compete in events like the bear drag, the water drag, and treeing.

At noon, handlers line up six dog kennels along the edge of a pond for the water drag. A bell sounds, the doors fly open, and the dogs plunge into the water after a raccoon skin pulled across the surface by a rope. In a contest called treeing, judges count the number of times a dog barks in 30 seconds. The winner today has 72 barks. (A similar group, the Montana Federation of Houndsmen, sponsors its own trials.)

I ask Tony Knuchel, an MHA board member, about the appeal of running hounds and hunting lions. "See that hill up there?" says the Potomac resident, pointing to a mountaintop in the nearby Big Belts. "A person might want to go up there sometime and see that place. But there's really no reason to do it, so they don't. But when you've got hounds chasing a lion up there, you've got a reason. I see more of Montana in a year than most people see in a lifetime, just following my dogs."

Without lions, however, houndsmen have no more reason to explore the mountains than anyone else. Which is why these hunters were the strongest advocates for reduced harvest quotas and the biggest supporters of Rich DeSimone's ten-year mountain lion study.

Over the din of barking and howling dogs (another water drag is about to begin), Knuchel tells me that most houndsmen pursue lions more for the thrill of the chase than to kill a trophy. "Shooting the cat is not what most of us are into," he says. "In doing this for 14 years and having treed about 300 cats, I've only shot one, and I'll probably never kill another. The rush for me, I think for all us houndsmen, is training the dogs and seeing and hearing the dogs work as they chase the cat. The pleasure is all in the dogs."

—Tom Dickson

ness of DNA sampling to estimate lion population size. At the U.S. Forest Service Rocky Mountain Research Station Genetic Laboratory in Missoula, scientists figured out how to identify individual lions by analyzing the DNA in hair and tissue samples. This allowed DeSimone to learn which lions produced the hairs often found on snow tracks. It also meant that houndsmen such as Hedrick, who worked with the research crew during the last five years of the study, no longer needed to capture and handle a cougar to learn its identity. After treeing a lion, they could shoot it with a biopsy dart that extracted a small piece of tissue the DNA researchers could later examine.

The findings

From the decade-long study, DeSimone has gathered vast amounts of information that other FWP biologists say is sorely needed to manage Montana's mountain lions. Among the baseline data the research team collected: number of kittens per litter, age of first reproduction, intervals between births, age when young lions leave their mother, difference in dispersal times between males and females, sex and age ratios, home range size, and changing densities of lions on the landscape. "The information is extremely important, because any time you get into modeling—making predictions about what's going on with wildlife populations based on available information—you need solid data like this to work with," says Jim Williams, FWP northwestern region wildlife manager in Kalispell.

"...but in our study area, we found that hunting is the number one factor affecting mountain lion distribution and abundance."

DeSimone cautions that the information has not yet undergone complete statistical analysis nor the comprehensive peer review necessary to make scientific conclusions. However, he can make several general observations from the study. The most significant is that hunting has a major effect on lion populations. "People thought you couldn't really overhunt lions because the animals were too elusive," DeSimone says. "But in our study area, we found that hunting is the number one factor affecting mountain lion distribution and abundance."

On the other hand, the study found that hunting does not seem to alter mountain lion biology. "Compared with a nonhunted population, there weren't major differences in litter size or age of breeding," DeSimone says. "What that signifies is that carefully controlled hunting appears to be a viable management tool." The "carefully controlled" part is important. "We also learned that hunted lion populations were younger, had fewer males, and took a lot longer to recover from declines than had previously been thought," DeSimone says. "That means we can't harvest lion populations as heavily as we have in the past."

According to Mike Thompson, FWP western region wildlife manager, the research project confirmed that high quotas in western Montana during the late 1990s hit lion populations too hard and prevented recovery. "Rich's study came at the right time, because it demonstrated without a doubt that we had driven lion numbers down below a desired level, and it allowed us to monitor how long and under what circumstances lion populations rebound," he says.

Another significant finding was that DNA sampling can provide an accurate lion count in a specific area. "We now know that by hiring houndsmen to tree lions and shoot them with biopsy darts, we can find out the exact

DNA BREAKTHROUGH Recently, scientists have learned to identify individual lions by analyzing DNA. Houndsmen tree a lion, shoot it with a biopsy dart (below), then retrieve the dart, which contains a small piece of tissue. DNA scientists later study the tissue to identify traits of the animal.

LUKE DURAN

number of lions in an area," DeSimone says.

As for the indirect population monitoring, DeSimone is still analyzing data to see if using deer hunter and houndsman observations, along with monitoring deer and other prey abundance, might reliably reflect lion population trends. "We'll probably have to look at several indicators," says DeSimone. "One thing isn't going to tell all."

Science that matters

Now that the study is finished, FWP plans to draft a statewide mountain lion management plan. Based on the study results, the plan will guide future decisions such as harvest strategies and population objectives. "We need to establish objectives for the density of lions we want in different places, and the public needs to be involved," says DeSimone. "In areas where we have more public land and less livestock, such as in northwestern Montana, we can have more lions and can manage populations at close to their biological potential. In eastern Montana, where lions come into conflict with livestock, we'll need to manage for fewer lions. And in populated urban areas, we won't tolerate lions. We hope Montanans learn to live with lions and form some balance with these incredible wild animals."

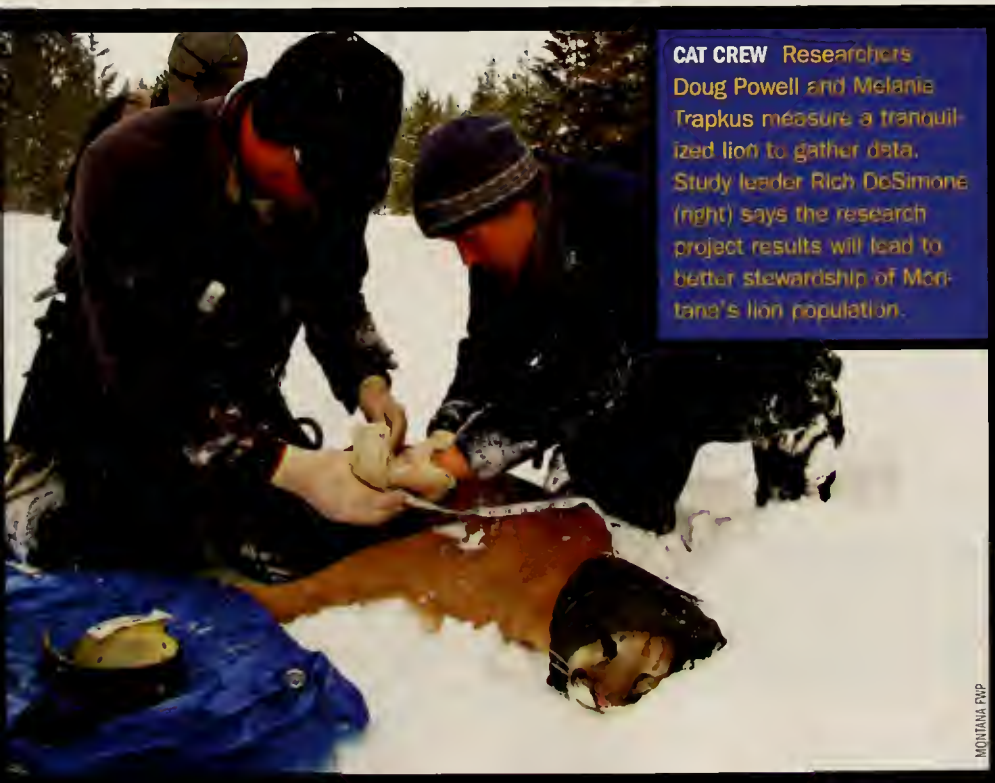
DeSimone's work is already influencing management decisions. In 2006, northwestern region wildlife biologists used the research findings to show how easily lions can be overharvested. As a result, they were able to establish a limited-entry permit system like the one used for hunting moose, mountain goats, and bighorn sheep. "FWP is doing a really good job now," says Hedrick. "I think this study will probably save the department a lot of legal challenges, because it produced good information that's hard to dispute."

"He said, 'Rich, you won't like what I'm gonna tell you, but I killed one of your big males.'"

Vic Workman, FWP commissioner representing northwestern Montana, says the research results will help guide important decisions he and other commission members must make. "The better the biology and science we have behind decisions affecting hunting and wildlife, the easier it is for us to make decisions and then explain to the public why we made them," he says.

DeSimone hopes his work will increase the regard that Montanans have for mountain lions. The biologist notes that historically, cougars were the most widely dispersed animal in the western hemisphere—and also the most intensively persecuted. "Fear and hatred of lions run deep in folklore," he says. "Only relatively recently has the public asked that lion populations receive some type of protection."

Though an avid deer and elk hunter, DeSimone does not hunt lions. But he respects those who do, as long as they care about the animals. He knows that most houndsmen hunt lions for the thrill of the chase, to see and hear their dogs work, and to witness a cougar's cunning, speed, and grace. And he knows that while some hunters will shoot any legal lion they can, others kill only one or two lions of the hundreds they tree during their lifetime. Because the lions in the study area had radio collars and ear tags, local houndsmen who killed a lion often knew it was one DeSimone had been studying closely for years. "A guy called me one winter and said, 'Rich, you won't like what I'm gonna tell you, but I killed one of your big males. But it's the only one I've ever shot, and I did it because it was big enough for the record book.' And you know, I was okay with that guy shooting that lion. The main thing is I want hunters to care enough about lions to work with us to keep healthy populations around for a long time."



CAT CREW Researchers Doug Powell and Melanie Trapkus measure a tranquilized lion to gather data. Study leader Rich DeSimone (right) says the research project results will lead to better stewardship of Montana's lion population.

MONTANA FWP

MONTANA FWP

SMOKY SUNSET FROM THE ROCKY LAKES FIRE NEAR SEELEY LAKE, 2007. PHOTO BY ANGIE KIMMEL

FIRE SEASON

BY RICK BASS

The fire is just one valley away, and coming with the wind, we just don't know quite when. But fires or not, we're cresting the back side of summer and now passing berry season; the year's berries must still be gathered, if we are to have huckleberry jam in the coming year, and pancakes and muffins and milkshakes, if we are to have huckleberries on our ice cream, if we are to prepare huckleberry glazes for the grilled breasts of wild duck and grouse.

Will the berries have the slight scent of wood smoke this year? I try to taste it as I sample them, but can't; they still taste like huckleberries. Or perhaps everything is so saturated with the scent of smoke that I no longer notice any difference.

The valley is filling even fuller with smoke and heat, as if it is but a vessel for these things to be poured into it. I sit in the middle of a rich huckleberry patch and pluck berries contentedly, falling quickly into that daydreaming lull, the satisfied trance that seems to fill me, with its deeper echoes of older times, as if I am the vessel. And having wandered, luck-filled, into a place of bounty, I will do well to just sit here for a while,

pleasantly satisfied, daydreaming and harvesting, daydreaming and gathering; and no matter, really, that the valley might soon be burning down around me, for what can I do, really, even if it is?

I pick for about an hour, suspended in this lovely August grace before I discern the change coming. I can feel the drop in barometric pressure almost as violently as when a plane in flight bumps and sags suddenly, pitching plastic cups and playing cards to the floor in a clatter. The wind of a coming storm is not yet here, but I can see it, dark in the distance. I can see the wall of dust and smoke it is pushing ahead, like a piston; and up on my berry mountain, in that compressing dead-air space caught between the approaching storm and the mountain, I can feel the vacuum that is being created, and it is as unsettling a feeling, physically and emotionally and even spiritually, as was the berry-picking of only a few minutes ago fulfilling.

Next, then, I can hear the wind, as the advancing plume of it slides in over the air sandwiched below—the air in which I am still sitting, trying to pick huckleberries, trying to gather up the last of the summer's harvest—sensing or suspecting somehow that this might be my last leisure-day in the woods for a while, my last leisure-hout—and as that first-approaching upper tongue of wind slides in across the mountain, just above the mountain, it passes through the upper reaches of the Swiss-cheese excavations for all the many woodpeckers that have riddled the blackened, towering spars left over from the last fire, six years ago, and through the fire-gnawed Rorschach shapes, the strange gaps and apertures left in the husks of old tree trunks.

The result is a kind of music like none I have ever heard before, somehow both somber and joyous, and intensely powerful, fueled by more wind than all the human lungs in the world could ever provide, and it is singing right here, right now, on this mountain, and I am in the center of it, and part of me is frightened and confused, and yet part of me is not frightened; and I keep picking berries, though now in the distance I can see tremendous bolts of lightning, and can hear the cannonade of thunder.

There is no rain. The air is as void of moisture as a laundered sheet taken crisp and hot from the dryer.

The wind is still above me, the lower waves have not quite yet come sweeping up the mountain, and up above, as the wind moans through those hollow burned-tree keyholes and pipe-flutes, it bangs and rattles also against the taut hollow hides of the larger snags and spars, creating a deep drumming resonance to accompany all the strange organ-pipe howling, which from a distance sounds like a thousand calliopes playing for some demented, wonderful, terrifying circus—though right here where I am, beneath and amid the drumming and the howling, it sounds like tremendously amplified symphony music—a thousand of the world's largest chamber orchestras—and now the wind-beneath-the-wind is reaching me, splashing in over me like dry waves at the ocean—the wind coming so strong that when I stand up, I can lean downhill into it without falling down, suspended like a hawk, or a heavy kite—and this lower wind is carrying pine needles and grit, which sting my face and arms and bare legs, and I have to turn my face to shield my eyes against them, and I know more than I have ever known that there is no hand of

mankind, no technology or science or knowledge, or management directives, that can influence in the least this expression of power, this breath of a living, restless earth: and again I feel tiny, puny, even invisible, and it is exhilarating, and I am reminded intensely of what an astounding privilege it is to be alive; of how rare the circumstances are that conspire to bring life.

STOCK KOHNGE

I can see the lightning walking up the valley from the south, striding toward me, and I hurry down the mountain, through the stinging needles and grit. Entire tree limbs torn loose from the canopy float feathery, lichen-laden, through the sky. Entire treetops snap off occasionally and launch into the air a short distance, like failed rockets.

Farther down the mountain, I can hear still more tree trunks snapping, a sound like cannons. It seems to me that the earth beneath my feet is buzzing or trembling, and the sky is plum-colored now, but still there is no rain, only wind and fire, and boiling clouds of dust.

I hurry through the tangle of old blowdown, old fire-char and new berry-bush, new green saplings, running as a deer might, into the wind, hoping to weave my way unscathed through that maze of falling branches—and once I'm back at the truck, and driving down the logging road (hoping that no trees fall across the road: I have a little emergency bow saw in the back, but it would take a long time to cut through a tree with that), I'm disoriented by the way the entire forest around me seems to be waving like nothing more substantial than the undersea fronds of kelp or reed-grass; or like the thick hair on the back of an animal's back, pressing flat and then swirling in the wind.

What a revelation it is, to have one's perceptions—one's universe—so startlingly re-ordered, so corrected or amplified. The forests of immense trees are powerful and awe-inspiring, but even they are tiny beneath these gusts of breath from a living, sometimes restless world.

And once I'm home, the girls and I go out onto the porch and watch the lichens and limbs continue to sail through the air, and gaze at the strangely glowing sky, a greenish hurricane-sky, and watch the streaks of lightning, and count, with thumping hearts, the number of seconds before we hear each crack of thunder... And still there is no rain, not even a little spit of it, and like a beggar or a miser or even a rich man gone broke, I find myself remembering the blizzard from last New Year's Eve, and the heavy wet late snows in April. I'm hoping that moisture has been retained to hold back some of the fire, even as I understand more clearly than ever that the fire must come, that it is no different from the wind or the snow itself—that it has shaped, and continues to shape, this landscape; that it is its own kind of season, and that the time for it has arrived; that in this regard it is as unstoppable as the wind or the rain.

It's simply, or not-so-simply, a part of the world out here; it helped make the world out here. How strange to think that the fire helped sculpt and create the very thing it occasionally consumes. What an amazing thing, to stand just out of harm's way, at the edge of the valley, and watch it pass through, as it always has, and always will.

Troy resident Rick Bass is the author of 21 books of fiction and essays.

W. STEVE SHERMAN

THE NOSE KNOWS

How scent-detecting dogs locate fishers, lynx, and other hard-to-find wildlife species

By Kathryn Socie

KEEPS ON GOING Still fired up after an hour of intense work, Pepin plays tug-of-war with his handler, Megan Parker, as a reward for locating fisher scat in the Lolo National Forest. Conservation dogs possess an obsessive drive to work, matched with an unrelenting focus on toys and play.

JESSE KRAMER

Near Lolo Pass, along Montana's border with Idaho, a light drizzle falls on larches lining steep mountainsides. Pepin, a tall, lanky, fawn-colored dog with a dark muzzle, paces in the back of the car, panting excitedly and steaming up the windows. When his handler, Megan Parker, opens the door, he bounds out and wildly races in circles. Parker calls for the dog to sit and places an orange vest around his chest. "Go to work," she says. He races off into a thick cedar-hemlock forest, followed by Parker and Lisa Holsinger, whose job is to keep the team from getting lost.

Pepin is a Belgian Malinois, a European breed trained for drug and explosives detection, search and rescue, and personal protection (it's the only breed used by the U.S. Secret Service). Pepin's line of work differs slightly. He has been trained to smell the scat (feces) of fishers, a large member of the weasel family. Fishers are one of the rarest animals in the Rocky Mountains. Researchers at the Missoula-based U.S. Forest Service Rocky Mountain Research Station are working with Parker, co-founder of the Montana-based Working Dogs for Conservation Foundation (WDCF), and her canine crew to locate the rare predators and better understand why so few exist.

FROM FUNGI TO FECES

Teaching a dog to find weasel scat may seem odd, but it's part of a long tradition of canine domestication that goes back thousands of years. Dogs were first tamed and trained to protect livestock and guard homes. Later they learned to perform a wide range of other services, from retrieving ducks to pulling sleds. People have also utilized the species's 220 million scent-sensitive cells—more than 40 times the number in a human nose—to sniff out information. For centuries, Europeans have used poodles and other breeds to find the underground fungi known as truffles. Dogs are also used to detect hidden bombs, sniff out heroin, and find people buried in earthquake rubble. Some scientists claim they have even been able to train dogs to detect lung and breast cancer by smell, helping with early detection. Small wonder the ability of some dogs to distinguish odors of animal scat, urine, hair, and other sign has caught the attention of wildlife researchers.

It can be nearly impossible for a human to locate rare animals such as fishers or lynx. Trapping sometimes works, but it can injure or kill the animal. Obtaining photographs from a remote-control camera requires that the subject walk in front of the lens. And scientists cannot obtain hair samples for analysis unless the animal rubs against barbed

wire or leaves hair in a track. Researchers have found that analyzing scat is often a more reliable way to gather data. Scat persists in the field for months and is found whenever and wherever an animal naturally travels. Most important, collecting scat does not require that an animal visit a particular site or behave in a specified fashion—major drawbacks of trapping, photography, and other information-gathering techniques.

For decades, scientists have examined scat to learn about an animal's diet. In recent years, they have learned to extract DNA from feces and determine the species, gender, and even identity of individual animals. The only problem with scat analysis is finding the droppings. That's where the dogs come in.

Not just any old Sadie or Max can become a scent-detection dog. The WDCF looks for high-energy animals with an obsessive drive to work and a fixation on toys. Because hyper animals like these can make difficult pets, many dogs used for conservation work come from shelters or overwhelmed private owners. Another essential characteristic, Parker says, are dogs "with confidence and the ability to withstand chaos." The larger, more athletic breeds generally perform better under the demanding conditions of conservation work. But nearly any breed can be trained in scent detection. Pedigrees aren't necessary, "but we need a dog that works not just for a toy, but also for the work," says Parker. Only 1 of about 250 dogs makes it through initial screening; of those, only 40 percent pass the rigorous training.

First, a dog is taught to find a specific scent and to indicate the discovery by sitting next to the sample. It also learns to ignore dis-

tracting scents. Next, the dog and its handler work on finding scents where neither knows the location. Later, the team works on directional hand and voice commands so the dog can work from a distance.

NOSE JOB

Once trained, the dogs go to work for science and conservation. Kim Goodwin, a conservation biologist at Montana State University, has studied the effectiveness of using dogs to find spotted knapweed, dyers woad, and other noxious weeds. In one study, teams of dogs were far more effective than humans in finding isolated plants, including tiny specimens that survey crews completely missed. She also found that canines can find plants that have not yet emerged from underground. "Dogs tested in the laboratory recognized root material, indicating they are capable of cuing in on portions of the plant that humans can't see," says Goodwin.

According to the biologist, dogs can discern the scent of one type of plant in a landscape containing 100 or more species. She explains that all plants produce certain chemicals, but each species gives off its own unique combination. Dogs are trained to detect the specific chemical ratios in what are known as the "vapor constituents" of target weed species.

Weed control works best when noxious invasives are eradicated before they gain a foothold in a native plant community or crop field. Dogs help weed control specialists find the early invaders, which then can be pulled or sprayed before spreading.

Montana Fish, Wildlife & Parks biologists have used scent-detection dogs to find and track wolves. Whenever a new pack enters an area of southwestern Montana, Liz Bradley, an FWP wolf management specialist, faces the difficult task of trapping a member so she can fit it with a radio collar and track the pack. Trapping a wolf can take weeks, due to the difficulty of finding where wolves consistently travel. "But dogs can pick up sign, such as urine posts, that people can't identify," Bradley says. In 2005, she used a WDCF dog near Philipsburg where ranchers had reported a new wolf pack. "He located wolf sign that helped us find good places to set traps, and we were able to catch a wolf that first night," she says.

WDCF dogs have also been used in New Jersey to detect pine snakes, Nevada to locate desert tortoises, and California to find the scat of endangered San Joaquin kit foxes. In Kenya, biologists use the dogs to better understand why cheetah populations are declining. In Argentina, scent-detection dogs are used to locate rare Andean cats.

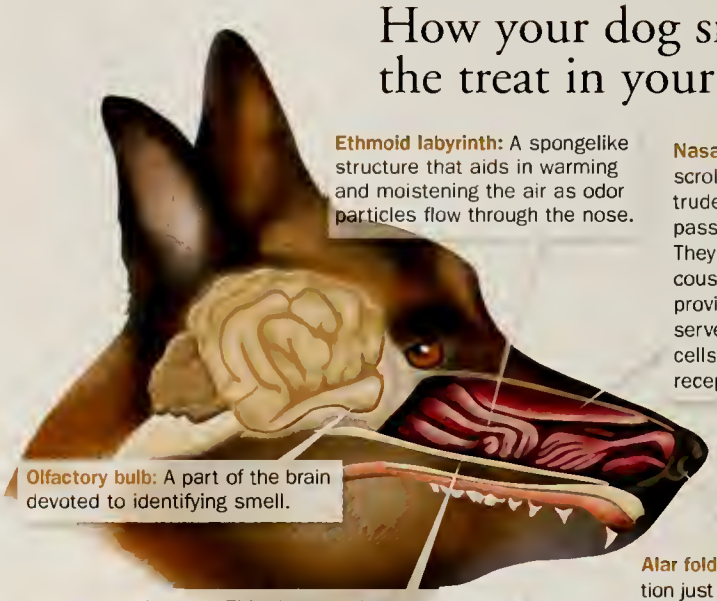
A GOOD DAY'S WORK

At Lolo Pass, Pepin is still racing through the forest in search of fisher scat. Parker and Holsinger try their best to keep up, struggling to wade a swift river and then thrashing through dense vegetation and over rain-slickened downfalls. After an hour, the dog hasn't scented any fisher scat, so Parker "focuses" him. She takes out a test sample found the previous week and sends Holsinger far ahead to hide the specimen. "Find it," she tells Pepin. He launches up the hill, scenting the air, head high, mouth open. He works the area wide then narrows in, tail wagging furiously. Suddenly he stops and sits. "Good boy!" says Parker, who pulls a toy from her pack and begins a game of tug-of-war as a reward. This is the dog's first work assignment, and though he doesn't find any new fisher trace, he proves himself up for the task.

Back at the car, Pepin jumps into the back and promptly lies down, apparently satisfied with today's expedition. At just a little over a year old, this leggy dog with off-the-charts energy has shown a tremendous drive for his vocation. To him, it's all just an exciting game. He has no idea that his innate scenting ability and extensive training will someday contribute to conservation work that helps biologists better understand the natural world.

Kathryn Socie is a writer in Missoula.

How your dog smells the treat in your pocket



Ethmoid labyrinth: A spongelike structure that aids in warming and moistening the air as odor particles flow through the nose.

Nasal concha: Paper-thin scrolls of bone that protrude into the breathing passage of the nose. They are covered in mucous membranes that provide humidity that preserves the delicate scent cells keeping olfactory receptors healthy.

Olfactory bulb: A part of the brain devoted to identifying smell.

Alar fold: A bulbous obstruction just inside the nostrils that opens and closes to create suction that helps the dog inhale even more odor-laced air.

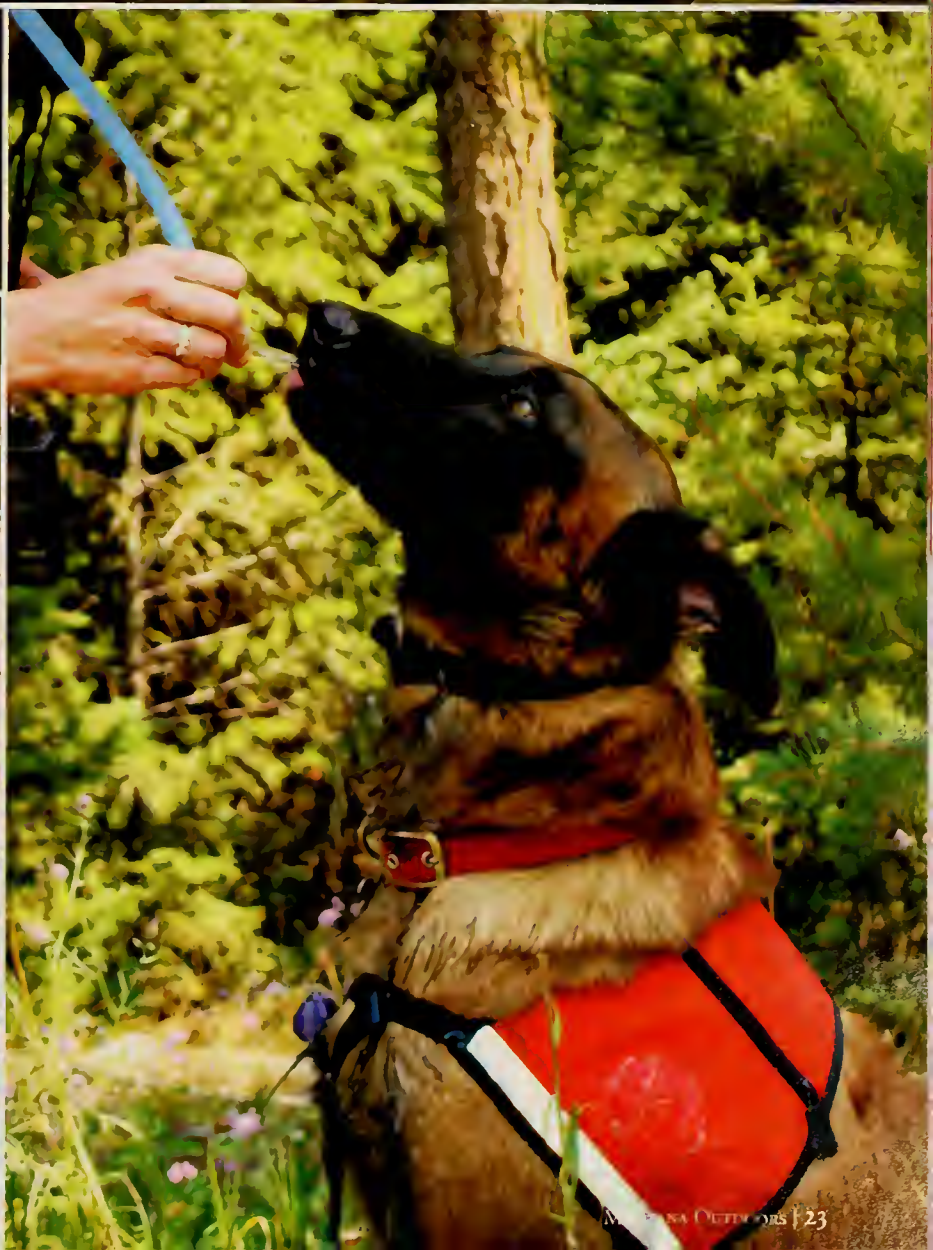
Vomeronasal organ: This detects pheromones (body scents), which may explain (scientists are still unsure) a dog's ability to identify and recognize individual animals and people by smell alone.

A dog has two nasal openings. When it takes a big sniff, the nostrils widen, allowing more air in. The sniff also straightens the nasal cavity so the odor molecules in the air travel straight back to the scent receptors, located within special cells deep in the snout in structures called concha, or turbinates. The moisture on and inside the nose acts as a magnet to catch odor molecules in the air and on the ground. The collision of odor molecules and scent receptors creates nerve impulses, which travel along olfactory nerves to the olfactory bulb and then the rest of the brain. A dog has roughly 220 million scent receptors in an area that, if unfolded, would cover a dinner plate, while a human has about 5 million receptors over an area the size of a quarter.

MELISA BEVERIDGE NATURAL HISTORY ILLUSTRATION

DOG PHOTOS BY KATHRYN SOCIE. FISHER PHOTO BY GERALD AND BUFF CORSI © CALIFORNIA ACADEMY OF SCIENCES

HURRY UP! Pepin waits for Parker to cross a river during his first day at work. Biologists have found that highly motivated scent-detection dogs are one of the best tools for monitoring populations of elusive species such as fishers (below). Bottom left and right: Used exclusively by the U.S. Secret Service, Belgian Malinois are a breed known for their intense focus when on task—and even when taking a water break.



Hunting the Elusive Orchidaceae

The expedition would take her deep into the forest to places few people had ever seen—places where she might find rare species that had eluded her for years.

By Ellen Horowitz

My eye caught notice of an orchid hunt in the Montana Native Plant Society newsletter: "Highest concentration of orchid species in Montana . . . Hike requires a stream crossing and some bushwhacking through an unstable landslide area. . . Expect a long-but-rewarding day."

I'm an orchid hunter. I had to go.

At the time—three years ago—I'd been avidly pursuing orchids for roughly a decade. My addiction to looking at and identifying wildflowers started in high school, but a craze for orchids began years later, when a botanist friend showed me several rare specimens in Glacier National Park. Since that wonderful introduction, I had covered thousands of miles on foot and horseback in the woods and mountains of northwestern Montana and located 24 of the state's 30 native orchid species. I'd seen some remarkable orchids, such as twayblades with their miniature flowers, but a few rare ones had eluded me, including the roundleaf and the sparrow's-egg lady's-slipper.

The night before the orchid search, I left my Flathead Valley home, drove east through the Blackfoot Valley, then camped along the Rocky Mountain Front to be closer to the 8:30 a.m. meeting place. I had not met Wayne Phillips, our trip leader, but knew of his reputation as a botanist, teacher, and author of several wildflower books. I also knew that accompanying him would be my best chance to see some of Montana's rarest orchids.

Many people are surprised to learn that orchids grow in Montana. They associate the plants with faraway, exotic places. While it's true that most orchids live in the moist, hot tropics, they also show up in many other environments. At least 30,000 native species have been found throughout the world, making orchids one of the largest families of flowering plants. They inhabit every continent except Antarctica and are found in nearly every type of terrain except true desert.

Orchid season in Montana begins in late April, when the first pinkish purple blooms of fairy slippers emerge in moist woodlands and mountain foothills. It ends when the spiraling flowers of ladies' tresses begin to wither, usually in August.

Most Montana orchids grow around forests and near wetlands in the state's western half. These perennials range from 3 inches to more than 3 feet tall. The individual blossoms are small but widely varied, ranging from the beautiful to the bizarre. Many people are familiar with the slipper-shaped blossoms, but orchids also resemble pixies, gargoyles, grinning elf faces, or cow heads complete with ears and horns. Some orchids have long, saberlike spurs; others are adorned with ribbonlike petals, helmets, or hoods. Just as diverse are the leaves, such as the snakeskinlike foliage of the northern rattlesnake-plantain, or the saucer-sized leaves of roundleaf bog-orchids. And then there are the mysterious saprophytic orchids—known as coralroots—which have leafless stems of maroon or yellow.

Giant helleborine, or chatterbox (*Epipactis gigantea*)

HARLEY H. JOHNSON

In many ways, the search for orchids is the flower lover's equivalent of elk hunting, another one of my favorite outdoors pursuits. Of course, orchid hunters carry nothing more lethal than hand lenses, cameras, and possibly, binoculars. And there's no harvest involved, because transplanting orchids or even picking the flowers can kill the plant. But both activities require an inner drive that keeps hunters pursuing an elusive quarry. As is the case with elk, hunting orchids can demand brutal treks over long distances, through dense forests, and up steep mountains. And few places have more demanding terrain than the orchid habitats—the locations of which I have promised not to reveal—that Phillips showed us during our great orchid hunt.

Thirty-three wildflower enthusiasts showed up on that Fourth of July weekend, most of us amateur botanists but a few professionals. After driving west a half hour from the prairie up into the Front, we stopped and walked several hundred yards down a back road where pines shaded a spring-fed hillside. It didn't take long to locate the white flowers of mountain lady's-slippers and the sunshine-colored blooms of small yellow lady's-slippers. Meriwether Lewis called lady's-slippers "mockerson flowers," because the pouchlike lower petal resembles the traditional leather footwear. This was the first time I'd seen the two species growing side by side.

Like many orchids, lady's-slippers do not produce pollen but are able to trick insects into performing pollination. When a bee, attracted to a nectarlike scent, alights on the pouch, it slips off the slick, slanted landing pad and winds up inside the flower. There it discovers no sweets and no easy escape. As the disappointed bee exits through a small opening at the rear of the pouch, its back becomes coated with pollen. The bee deposits the pollen on the stigma of the next nectar-scented slipper. Though older bees eventually learn to avoid these beautifully deceptive orchids, young bees are easily duped.

We drove to our next stop, where Phillips led us on a mile-long walk. The prairie was studded with yellow, white, purple, and pink flowers of midsummer. It was a beautiful setting but seemed too arid for orchids. Then we saw an oasis of willows and aspens, and I knew that moisture—and orchid habitat—was nearby. We leaped across the grassy banks of a small creek and continued walking into a lush meadow. Someone spotted a group of 3-foot-tall giant helleborine orchids. It was one of the species on my "must-see" list.

Montana has no orchids listed as state or federally threatened or endangered, but the giant helleborine is considered rare. Previously I'd seen the foliage of this elusive

CLOCKWISE FROM TOP LEFT: DAVID ANDERSON, MARK LAGERSTROM, TOM FORWOOD, STEVE AKRE, DAN TAYLOR, D. JENNETT BLANK, ANGIE KIMMEL, DAVID ANDERSON

Ellen Horowitz is a writer in Columbia Falls.

TROPHY HUNTERS For centuries, people have considered orchids the most exotic and valuable of the flowering plants. In Victorian England, collectors hired orchid hunters to scour the world to find rare and beautiful specimens. Today, the sale and trade of wild orchids is prohibited by international law. Because even picking the flowers can kill the plant, biologists recommend photographing orchids as a way to safely "harvest" your discovery. Among the Montana species most valued by orchid fans: 1. northern rattlesnake-plantain (*Goodyera repens*); 2. mountain lady's-slipper (*Cypripedium montanum*); 3. spotted coralroot (*Corallorhiza maculata*); 4. roundleaf rein-orchid (*Habenaria orbiculata*); 5. calypso orchid, or fairy slipper (*Calypso bulbosa*); 6. Pacific coralroot, (*Corallorhiza mertensiana*); 7. bog rein-orchid, (*Habenaria dilatata*); 8. northern green rein-orchid (*Platanthera hyperborea*).

MONTANA BEAUTIES 1. Small yellow lady's-slipper (*Cypripedium parviflorum*); 2. striped coralroot (*Corallorhiza striata*); 3. heartleaf twayblade (*Listera cordata*). Facing page: New coralroots grow in a recently burned area of the Big Belt Mountains.

orchid, but never one in bloom (the floral equivalent of finding elk tracks, which says you're at the right place but at the wrong time). Phillips explained that the orchid's common name, chatterbox, comes from the flower's hinged lower lip, which quivers when touched or shaken by the wind. I viewed them through my binoculars, since they were on the far side of a deep creek. My 10X field glasses magnified the fine details of the pinkish purple and greenish flowers, which resemble elfin characters with mouths agape.

By noon we'd seen a half-dozen species, including white bog orchids, which have a fragrance so delicate that I stop for a whiff whenever I see them. When we returned to the vehicles, half the group called it a day. But the rest of us were ready for more. We continued west, driving up toward the mountains. At a roadside pull-off, Phillips led us a short distance into the woods, and there we saw yet another rare Montana species (and another one new to my life list)—the roundleaf orchid. A mossy seep nurtured hundreds of these exquisite dainties. I was transfixed by their tiny, tropical-looking pink-, white-, and magenta-spotted flowers, which seemed out of place in the pine forest ecosystem.

Unique among orchids, the roundleaf is the sole plant in the genus Amerorchis. These orchids grow only in the northern latitudes of North America and are far more common in Canada and even Alaska than Montana. I felt privileged to observe up close what may be one of the plant's southernmost populations.

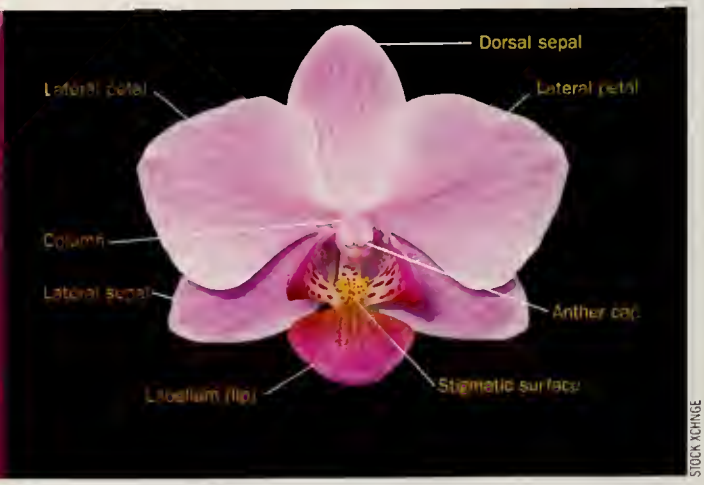
Phillips told us that many wild orchids are so intricately connected to microscopic fungi in the soils where they sprout and grow that they don't survive transplanting. Some species die even when their flowers are plucked from the ground, because the tug damages the roots. I wasn't surprised to learn that such remarkable plants were also so delicate and vulnerable to disturbance.

Our group's next quarry was the rare sparrow's-egg lady's-slipper—the orchid I most wanted to see. To find one, Phillips told us, we'd have to work for it. The species has been documented in only a few Montana locations, so the chance of stumbling across one was remote. That was enough to scare off sev-

Recognizing Orchids

All orchid flowers are bilaterally symmetrical—that is, the right and left halves are identical. Each flower consists of three sepals and three petals. The two lateral petals are mirror images of each other. The third petal, called the labellum, or lip, is usually showier and more colorful. Its function is to attract bees, hummingbirds, and other pollinators. The stigmatic surface is where the pollinators deposit small masses of pollen grains, known as pollenia.

The fingerlike structure in the middle, known as the column, fuses the reproductive organs: the stigma (female) and stamens (male). The anther cap is where the orchid stores pollenia.



STOCK XCHNGE

eral more of our group, but ten intrepid orchid hunters remained. We began hiking down a steep bank to a creek crossing. I used my walking sticks to catapult to a midstream gravel bar then to the far bank. We maneuvered through ankle-twisting river rocks and worked our way back into the woods, bypassing clusters of mountain lady's-slippers. We were no longer stopping to look at every orchid we saw unless it was a new find. Then someone from the back of the line shouted, "Calypso orchid." I wondered if it was just a ploy to get the rest of us to slow down. Phillips had told us the calypso orchid, or fairy slipper, generally blooms much earlier in the year. But when the group went back to look, there it was, the 13th species of the day. Phillips said the higher elevation and the cool, shady environment had created springtime conditions in midsummer.

Encouraged, we continued our search for the sparrow's-egg lady's-slipper. Phillips led us up a ridge, then over tangles of downed lodgepole pines and fallen spruce. I have no idea how long we hiked or what distance we covered, but I know we were so deep in the forest I would not have been surprised to see a trophy bull elk. When we finally reached a place where soggy moss covered the ground and towering spruce kept the woods dark and cool, I began to sense we were getting close.

Phillips instructed us to spread out so that we could cover more territory. We moved slowly and deliberately, scanning the ground. Then Phillips saw one of the orchids, though it had not yet opened. Still, the plant helped the rest of us know what to watch for. After inching along another 15 yards, eyes raking every square inch of ground for a telltale leaf or blossom, I spied what I'd so hoped to see—a sparrow's-egg lady's-slipper in full bloom. Phillips signaled the others to gather around the orchid, which was illuminated by sunlight filtering through the trees. We spoke in hushed tones, as though in a cathedral. In fact, we were in a sacred place, one where we all felt reverence and awe.

Sparrow's-egg lady's-slipper (*Cypripedium passerinum*)

NICK FUCCI

I felt immense satisfaction seeing the rare orchid and enormous gratitude to Phillips for sharing his secret place. I knew I would likely never return to that site and realized I would probably never see another sparrow's-egg lady's-slipper. Certainly I was glad to have added a checkmark to my orchid list. But more important was knowing that I'd experienced the hunt of a lifetime.

Learn more about orchids at the Montana Native Plant Society website: umt.edu/mnps. Among the guidebooks for identifying orchids: Northern Rocky Mountain Wildflowers, *by Wayne Phillips (Falcon Press);* Wildflowers of Montana, *by Donald Schiemann (Mountain Press);* Forest Wildflowers, *by Dee Strickler (Falcon Press); and* Wildflowers of Glacier National Park, *by Shannon F. Kimball and Peter Lesica (Trillium Press).*

The Orchid Thief, *by Susan Orleans, provides thrilling accounts of the dangerous and illegal world of wild orchid collecting years ago. An excerpt: "Dozens of hunters were killed by fever or accidents or malaria or foul play. Others became trophies for headhunters or prey for horrible creatures such as flying yellow lizards and diamondback snakes and jaguars and ticks…."*

Little-Known GEMS

Low-profile state parks are treasures just waiting for you and your family to discover

BY LEE LAMB

No doubt you've heard of, if not visited, Lewis and Clark Caverns State Park. For decades, this crown jewel of Montana's state park system has delighted visitors with its breathtaking underground landscape of limestone stalagmites and stalactites and remarkable history of discovery and exploration. But you probably don't know that a few miles away sits another state park also rich in Montana history and its own unique above-ground sights.

In the early 1900s—about the same time Tom Williams first discovered and explored the caverns—homesteaders were moving into western Montana, building modest log cabins and farming their 160 acres through droughts and blizzards. Parker Homestead State Park is a remnant of that pioneer era and the hopeful, hardworking families who built this state. Along old Montana Highway 2 southwest of Three Forks, the two-room, sod-roofed cabin and shed were constructed by Nelson and Rosa Ellen Parker. While most original homesteaders' cabins have long since disappeared, the Parker structure

Parker Homestead

remains intact, thanks to Fish, Wildlife & Parks renovations that stabilized the roof and walls. The cabin's log walls and beamed ceiling exhibit craftsmanship that has helped the structure stand for a century. Outside is an old water pump and jackleg fence. Stand next to the cabin beneath the ancient cottonwoods shading the remote site. Gaze at the distant Tobacco Root Mountains and imagine what it must have been like to raise crops, cattle, and a family here. This is a piece of the authentic Old West that has all but disappeared from the New West.

At only 2 acres, Parker Homestead is Montana's smallest state park, but the historic site is well worth a visit. The park is one of many little-known gems in Montana's vast state park system, sites that don't receive much attention. Some are tiny, some are far off the beaten path, and others have simply escaped much notice. But each of these obscure parks, including the eight others listed here, makes an important contribution to Montana's history, culture, or recreation.

LEFT TO RIGHT: CAROL POLICH; CHUCK HANEY; MICHAEL & PATSY FRIBLEY; JUDY WANTULOK

Lake Mary Ronan

Flathead is the largest natural lake west of the Mississippi River. For a family weekend trip, it can be a bit overwhelming, like camping next to a vast sea. Far more human in scale is nearby Lake Mary Ronan, which, at 1,500 acres, is still plenty big for water recreation.

The state park at the lake is also manageable in scale. There's plenty of room for kids to run around, but it's not so big you need another zip code when moving from one campsite to another. The 120-acre park is a favorite with residents of Kalispell and nearby towns, who appreciate its many amenities.

Water is the feature attraction. Lake Mary Ronan sees a regular contingent of anglers who troll the lake for the kokanee salmon and westslope cutthroat trout FWP stocks each year. The lake also holds a strong yellow perch population as well as largemouth bass and pumpkinseed sunfish.

The lake is great for swimming, boating, and waterskiing. While the kids toss rocks and splash in the shallows, Mom and Dad can rest nearby in lawn chairs, dozing to the sound of lapping waves and giggling children. After the nap, the family can hike on any of several trails that leave the park and enter national forests or publicly accessible lands managed by the Bureau of Indian Affairs.

Lake Mary Ronan

Greycliff Prairie Dog Town

Prairie dogs are small mammals that live in colonies, which once covered the Great Plains. Many people, especially nonresidents, have never seen a prairie dog colony and the constant activity of its squirrel-sized residents. Greycliff Prairie Dog Town is one of the most convenient spots in Montana to observe these lively communities. "People enjoy viewing prairie dogs, and Greycliff is a very accessible place to do so," says Terri Walters, manager of this and several other state parks in south-central Montana. "It's right off the interstate, you don't have to leave your vehicle, and you're almost always sure to see prairie dog activity."

The state park is 1 mile from the Greycliff exit on I-90, a few miles east of Big Timber. The site may seem deserted when you first arrive, but stop in the parking lot or anywhere along the 1-mile driving loop and wait. Before long the stout, short-legged rodents will emerge from their burrows. The colony's residents are fairly accustomed to humans, but you need to stay in designated areas and keep pets leashed if you hope to see the prairie dogs' interesting and often amusing antics. The animals dig burrows, forage for food, groom each other, and watch for predators. Keep an eye out for golden eagles or coyotes, the presence of which will send an entire colony scurrying for safety.

Greycliff Prairie Dog Town

Thompson Falls

This is another fun family getaway site where kids can wear themselves out turning over river rocks and chasing crayfish in the shallows of the Clark Fork River. The river here is mellow with a slow flow, making it a great spot to swim in midsummer. The gentle current also makes it suitable for beginners to learn canoeing or kayaking. The river holds westslope cutthroat, rainbow, and brown trout. Along shore, visitors might see a mink, kingfisher, beaver, or white-tailed deer. FWP stocks trout in a small oxbow lake at the north end of the park for kids-only fishing. The little lake also holds frogs, herons, muskrats, and other wetland wildlife. It's a good place to watch for songbirds at dawn and dusk.

What about the falls? They were covered with water in the early 1900s when Thompson Falls Dam was built, several miles upstream of the park at the town of Thompson Falls.

Lost Creek

A visit to this pretty state park offers great opportunities to see mountain goats and bighorn sheep. Tucked in a deep canyon west of Anaconda off Route 273, Lost Creek is also home to moose, mule deer, porcupines, snowshoe hares, red-tailed hawks, and dusky (blue)

grouse. While you're glassing for goats and sheep that live among cliffs rising 1,200 feet above the canyon floor, note the pinkish white granite protruding diagonally from the gray limestone. Roughly 1.3 billion years ago, a shallow sea deposited mud that, over eons, compacted and hardened into limestone. As the Rocky Mountains began to uplift about 75 million years ago, molten rock was forced into limestone fissures, where it cooled into the granite you see.

Another park highlight is Lost Creek Falls, at the end of a short, paved, wheelchair-accessible trail. If you're up for a longer jaunt, hike the U.S. Forest Service trail beginning north of the falls parking area and winding along Lost Creek for several miles. The creek holds trout, so bring a rod if you like to fish.

Anaconda Smoke Stack

Near Lost Creek is historic Anaconda Smoke Stack State Park. Visitors cannot actually enter the massive smelting stack, but they can view the 585-foot giant from the park, on the city's eastern edge.

Completed in 1919 by the Anaconda Copper Mining Company, the stack at the Washoe Smelter served as a chimney to carry away smoke and gases produced during copper smelting. Interpretive signs at the park describe how workers built the smokestack and smelted ore mined in nearby Butte to make the valuable metal. Visitors can learn how the smelter contributed to the local and state labor movement and economies, and how Marcus Daly, Anaconda's founder, built Montana's ore smelting and refining empire.

By some accounts, the smokestack is the tallest free-standing brick structure in the world. To help visitors grasp the magnitude of the structure, FWP staff have placed interpretive signs along a circular walkway. The exterior edge depicts the stack's octagonal base, 93 feet in diameter, and the interior edge represents the stack's top, 60 feet across. Not surprisingly, this is the nation's only state park dedicated to a smokestack.

Lee Lamb is a writer in Pablo.

Tower Rock

Lewis and Clark buffs will not want to miss Montana's newest state park, on the Missouri River halfway between Great Falls and Helena on I-15. Tower Rock is where Captain Meriwether Lewis determined that the Great Plains ended and the Rocky Mountains began. On July 16, 1805, Lewis wrote, "At this place there is a large rock of 400 feet high which stands immediately in the gap which the Missouri makes on its passage from the mountains....This rock I called the tower. It may be ascended with some difficulty nearly to its summit and from there is a most pleasing view of the country we are now about to leave."

The Corps of Discovery had only recently completed its arduous circumvention of the Great Falls. Tower Rock marked the expedition's entrance into the Rocky Mountains, where even greater troubles would soon begin.

Sure-footed hikers can climb to the upper reaches of Tower Rock to see Lewis's view. Visitors can also hike along the rolling quarter-mile trail that skirts the rock on its east side. There they are treated to another far-reaching view of the plains.

fwp.mt.gov/parks

Lost Creek

Anaconda Smoke Stack

Tower Rock

"Tower Rock is one of the few places along the Lewis and Clark Trail where you can literally walk in the footsteps of members of the Corps of Discovery," says Tom Reilly, assistant chief of the FWP Parks Division. "A person hiking the trail can be fairly certain that Lewis walked up that same route. And because the surrounding landscape is almost undeveloped, you'll see many of the same things he did."

Mule and white-tailed deer frequent the park, and you might even spot a bighorn sheep scaling adjacent cliffs or elk grazing on open hillsides nearby. Because the park lies in the transition zone between prairie and mountain habitats, it displays an interesting mix of plant life. This is one of the few places where prairie species such as yucca and blue grama grow beside mountain varieties like wild rose and western snowberry.

From the top of Tower Rock, look south along the river for Hardy Bridge, 1 mile upstream. The silver steel structure was the scene of

LEFT TO RIGHT: CHUCK HANEY; CHRIS BOYER; STEVEN AKRE, CHUCK HANEY

the shootout between federal agents and rum-runners in the 1987 movie *The Untouchables*.

Pirogue Island

Four months after the stop at Tower Rock, the Corps of Discovery finally reached its goal of the Pacific Ocean. The following spring, the men headed back to St. Louis. After successfully traversing the Rocky Mountains, the group decided to split up. Lewis selected a more northerly route, while Clark journeyed down the Yellowstone River, where he camped on a large island on the outskirts of present-day Miles City.

Now known as Pirogue Island State Park, the site is popular with hikers, mountain bikers, horseback riders, bird watchers, agate hounds, anglers, and even deer hunters (shotgun or bow only). Visitors can reach the island from the mainland most of the year by crossing a dry side channel. When water levels rise during early summer, the only dry access is by boat from the Yellowstone River.

White-tailed and mule deer, wild turkeys, Canada geese, wood ducks, and dozens of songbird species live in the island's mix of cottonwood forest, meadow, and riparian habitats. Agates practically line the riverbed, and lucky visitors have found ancient remnants of buffalo skulls, bones, and teeth in the gravel bars.

"Pirogue Island offers a little something for everyone, whether they like to fish, watch birds, walk their dog, treasure hunt, or just sit and watch the world go by," says John Little, FWP's southeastern region parks manager.

Madison Buffalo Jump

Madison Buffalo Jump

Long before Lewis and Clark stepped foot in Montana, generations of American Indians lived here in an environment that could be both bountiful and unforgiving. Madison Buffalo Jump State Park, south of Logan, demonstrates the ingenuity of a culture that learned to conquer a beast that outweighed the average man by half a ton and provided nearly everything a tribe might need for the year. A covered pavilion below the jump protects several interpretive signs that describe how native people prepared for the hunt, lured bison to and over the plateau, skinned and butchered carcasses, and prepared food, clothing, shelter, and tools from the meat, hide, and bones.

"This is definitely a park you'll want to explore on foot," says Jerry Walker, FWP parks manager for southwestern Montana. Visitors might come across a tipi ring, uncover an arrow point, or find an eagle catch pit, which archaeologists believe Indians used to lure and capture the raptors for their plumage. (Be sure to leave any artifacts you discover where you found them.) The steep hike to the top of the jump is grueling, especially in warm weather, but it's worth the effort. From there you can see the Madison River and Tobacco Root Mountains to the west, the Gallatin River and Bridger Range to the east, and the jagged Spanish Peaks to the south.

The list of Montana's little-known state park gems goes on and on. There's the ghost town at Elkhorn, boating and waterskiing on Hauser Reservoir at Black Sandy, and river frontage tipi rentals at Beavertail Hill. Explore the historic Thompson Chain of Lakes by boat from Logan. Fish for stocked rainbows at Ackley. Launch your kayak at Finley Point and explore the Flathead Lake shoreline.

Montana is home to 50 state parks, ranging from 2 to 12,000 acres in size, where visitors can find everything from family camping spots and fishing accesses to historic sites and American Indian culture. Reilly says Montana offers state parks for every comfort level and interest—including those such as Parker Homestead and Lost Creek that so far have been discovered by just a handful of visitors. "These parks may not be as prominent as Bannack, Lewis and Clark Caverns, and some of the other famous spots," he says. "But our state park system would certainly be incomplete without them, and both residents and nonresidents are missing important parts of the Montana experience if they don't stop by and take a look for themselves."

For more information on these and other Montana state parks, visit fwp.mt.gov/parks.

LESSONS ON NEIGHBORLY RELATIONS

Learn about how to live harmoniously with wildlife at the newly renovated Lone Pine State Park visitor center. BY L. A. CROMRICH

People build houses on the outskirts of town for the privacy, quiet, and space. Another reason is a desire to live near elk, deer, songbirds, and other wild visitors. Unfortunately, wildlife and people don't always mix well. Bears raid bird feeders. Knapweed invades wildflower plantings. And moose have been known to migrate through picket fences.

The new visitor center at Lone Pine State Park in Kalispell could help. The center was recently renovated to help area residents and others understand and cope with the challenges that come when people build homes in what is called the "wildlife-urban interface."

During the visitor center's facelift, old exhibits were replaced with museum-quality educational displays and interactive stations that teach visitors how to live more cooperatively with wildlife and the land. The central exhibit shows a bear in front of a home, standing on a tipped garbage can, eating the contents. Visitors are challenged to find other things "wrong" with the residence, which also has an outside pet food dish, bird feeder, and pet access door. Another exhibit contains an interactive map showing where FWP has responded to complaints of nuisance grizzly bears, black bears, and mountain lions in the expanding communities of Whitefish, Kalispell, and Columbia Falls. The new exhibits challenge visitors to think about how their actions and lifestyles affect wildlife and the surrounding landscape. "Some of the new exhibits show people how to safeguard their homes against things like skunks under the porch, bats in the attic, and woodpecker holes in the siding," says Lone Pine park manager Amy Grout. "Others offer advice on how to keep dogs and cats from harassing deer and songbirds." One display explains how to identify several common noxious weeds and offers suggestions for keeping spotted knapweed, Dalmatian toadflax, and other non-native plants from invading private property and spreading to neighboring wildlands.

"Lone Pine has really become the perfect place to show people first-hand the transition zone from urban to rural," says Tom Reilly, assistant chief of the FWP Parks Division. Bordered by Kalispell on the north and east and Plum Creek and Forest Service lands to the south and west, the state park is situated at a typical Montana wildlife-urban interface. When it became Montana's second state park in 1947, Lone Pine was in a remote, forested mountainside, 5 miles away from what was then the small logging town of Kalispell. Over time, more and more people moved into the valley. Farms and ranches were sold for housing developments, and the fingers of expansion groped their way toward the park's boundaries. Since 2000, Kalispell has grown 40 percent, to its current population of more than 22,000 residents. The surrounding Flathead County has grown by 14 percent during that time to more than 85,000 people. Today, new housing sites nearly abut the park boundary.

Lone Pine State Park
(406) 752-5501
fwp.mt.gov/parks

Other exhibits at the visitor center focus on Lone Pine itself, from the park's presettlement history, to its beginnings as a state park, to a recent thinning project aimed at restoring the health and vigor of the park's forest lands.

In addition to its visitor center, Lone Pine provides other educational opportunities. Adult workshops teach basic skills of archery, birding, nature journaling, and snowshoeing. Special events focus on raptor viewing and

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stargazing. Every Friday during summer, a program called Little Saplings provides hands-on, nature-based activities aimed at four- to seven-year-olds (typical lesson: how frogs "sing"). Local school groups from kindergarten through 12th grade visit Lone Pine each spring and fall to learn about the interaction between predators and their prey, how water moves through the natural world, how forests are managed, and more. "My kids love the park, because they have the chance to get outdoors," says Pati Bowman, a first grade teacher at Elrod Elementary in Kalispell. She says the programs at Lone Pine complement the science curricula taught at area schools. "We teach them the background in the classroom, and then get out in the field at Lone Pine and apply what they've learned. It's the best way to teach science."

> "Lone Pine State Park has become the perfect place to show people first-hand the transition zone from urban to rural."

Lone Pine park ranger Melissa Sladek points out that the visitor center has become especially valuable since school districts have been forced to cut field trip budgets due to high gas prices. "We're close to town, and our education programs are free to schools, so we can offer students and teachers a great experience without asking them to spend a lot of money," she says.

The park is also a place to have fun, relax, and get a bit of exercise. Several lookout spots offer sweeping views of the valley. Hikers and walkers can follow 5 miles of trails. The park also has an archery range and a picnic area with tables and barbeque grills.

Dave Landstrom, FWP's northwestern region parks manager, sees the newly renovated visitor center as just one more amenity rounding out what was already an important educational and recreational spot for Flathead Valley residents and other visitors. "Lone Pine exemplifies the importance of having public land right at our doorstep," he says. "The park fills the need for a small wild place where you can hike, exercise the dog, and find peace and seclusion—and now, you can also learn how to be a good neighbor to wild animals and wild country."

PARK THE FAMILY HERE Located where growing residential areas abut wildlands, the newly renovated visitor center at Lone Pine is the perfect site for park guests to learn how to live harmoniously with wildlife. Clockwise from upper left: A display challenges visitors to identify things that might lure grizzlies to a residence; another display helps visitors learn to identify local native plants and animals; an exhibit provides information about harmful invasive plants, fish, and insects such as the pine bark beetle; the new entrance and gift shop.

VISITOR CENTER PHOTOS BY MONTANA FWP

KEEPING THE MAGIC IN MONTANA

Through the Montana Fish, Wildlife & Parks Foundation, ordinary people can help conserve grizzlies, elk, state parks, and other natural and cultural resources that make Big Sky Country such an enchanting place.

BY LEE LAMB

When the Wetzsteons decided to sell their southern Bitterroot Valley ranch, they could have made a fortune. Real estate agents regularly knocked on their door, offering a premium price for the 367 acres of timbered, rolling hills and lush pastures surrounded by scenic, snowcapped mountains. But the ranching family envisioned a different future for the land they had worked for generations. Instead of paved streets, padlocked gates, and million-dollar log homes, the Wetzsteons wanted their property to be a place where wildlife—and people—could roam freely. The family didn't have to look far to find a buyer with a similar vision.

For years, biologists with Montana Fish, Wildlife & Parks had known about the parcel and the nearly 1,000 elk that use the land. Deer, bears, mountain lions, and other wildlife also live there. The Wetzsteons had worked with FWP to manage elk and provide public hunting on their land through the Block Management Program. The ranching family had even volunteered to help the agency capture and radio-collar elk as part of a research project. Word got out that the ranch was for sale, and FWP officials took notice. "When a parcel of private land is available from a willing seller and is surrounded by state and federal land—and also supports the highest density of wintering elk in the Bitterroot Valley—it's definitely one this agency will work hard to secure," says FWP director Jeff Hagener.

After some negotiation, transfer of the Wetzsteon ranch into public ownership was ready to go except for one small detail: FWP couldn't meet the family's full asking price. State law requires that the department pay no more than the appraised value for land, which was $62,500 short of what the Wetzsteons needed. The Rocky Mountain Elk Foundation agreed to help raise the remaining funds, so it called on one of FWP's funding partners, the nonprofit Montana Fish, Wildlife & Parks Foundation, which donated $26,000 to the

BEAR DOGS The FWP Foundation has been a major funder of a Wind River Bear Institute program that teaches grizzlies to stay away from human habitation using fearless Karelian bear dogs—a breed that originated in Finland, where it was used to hold brown bears at bay. The nonlethal "bear shepherding," which also employs pepper spray and noisemakers, saves the lives of troublesome grizzlies that otherwise would be killed to protect public safety.

DEREK REILLY/DOUBLE PRODUCTIONS

project. Other conservation partners made up the difference, and in April 2007, the land was acquired to support wildlife and remain open to public use.

Though the foundation's contribution was just a fraction of the Wetzsteon property's final $688,000 sale price, it was a crucial one. "The FWP Foundation came through at a critical time to help us and the department complete this acquisition," says Mike Mueller, the Rocky Mountain Elk Foundation's senior lands program manager. "We know there were people around the country who would have paid a lot more for such a prime piece of land, so we're fortunate we got it when we did."

JESSE VARNADO

HELPING ELK AND RANCHERS The FWP Foundation oversees a trust fund that has purchased 5,548 acres of elk wintering range in the Elkhorn Mountains. The foundation also supports a program that increases landowner tolerance for elk in the Madison Valley.

FILLING THE GAPS

Helping FWP with critical purchases such as the Wetzsteon acquisition is part of what the FWP Foundation was designed to do. Created in 1999, the foundation raises private funds for projects beyond the scope of what FWP can spend using hunting and fishing license proceeds, the department's primary funding source. "Hunters and anglers can take a great deal of credit for providing the funds to produce and sustain Montana's fish and wildlife," says Hagener. "But the need for new funding continues to increase. The foundation helps fill the gap between existing funding sources and ever-increasing demands for more conservation work."

The FWP Foundation's eight-member board of directors meets quarterly to review and select projects. According to George Bettas, the foundation's director of development, the organization has raised $4.5 million, primarily through foundation grants, philanthropic donations, and corporate partnerships. Eighty-five percent of the projects funded so far have been submitted by FWP staff. The foundation also provides funding to other Montana organizations dedicated to conserving the state's resources.

"I don't have to tell anyone that Montana is a special place. But keeping it that way for our great-grandkids to appreciate and enjoy is the challenge," says Spence Hegstad, FWP Foundation executive director and a former FWP commission chairman. "The foundation gives folks who love this state for its beauty, wildlife, and history the opportunity to put some of their personal resources into conservation projects that can really make a difference. By bringing the public, other conservation groups, and state and federal agencies together, we can accomplish much more to preserve what I like to call the 'magic' that is Montana."

One "magical" element is the state's grizzly bear population, the management of which the foundation has been helping support since its inception. The first project assisted FWP with more than $1 million in funding for a Wind River Bear Institute (WRBI) program that helps bears and people coexist. The core element of the program is "bear shepherding," which teaches grizzlies to stay away from humans using specially trained Karelian bear dogs, in combination with other aversive conditioning tools such as red pepper spray, rubber bullets, and cracker shells. By also teaching residents how to live in bear country, the WRBI reduces the number of grizzly conflicts in northwestern Montana that might result in bears harming people or damaging private property.

CABINET-YAAK GRIZZLIES

In 2006, the WRBI grizzly program had enough support from other sources that the FWP Foundation was able to step aside and put funding into another essential grizzly project. Overall, grizzly bear populations are doing well in Montana—so well that in 2007 the U.S. Fish and Wildlife Service removed grizzlies living in the Greater Yellowstone Ecosystem from the Endangered Species List and is evaluating the possibility of delisting other populations in Montana (see "State of the Grizzly," March–April 2008). But grizzlies have struggled in the Cabinet-Yaak Ecosystem, an isolated area in northwestern Montana containing few people and abundant bear habitat. Since 2005, using foundation funds, FWP biologists have captured two young female grizzlies from near Glacier National Park and transplanted them into the Cabinet Mountains, hoping to augment the existing bear population. Biologists say the Cabinet-Yaak Ecosystem currently holds 30 to 40 grizzlies but has enough habitat to support 90 to 120. Researchers are monitoring the transplanted bears to see if they remain in the area and reproduce with resident males.

The FWP Foundation also helps fund a cooperative cattle grazing program in the Madison Valley. The Upper Madison Wildlife/Livestock Partnership works on improving range conditions and providing landowners with additional livestock grazing

Lee Lamb is a writer in Pablo.

opportunities. The aim is to increase landowner tolerance for elk wintering on their property, while enhancing and supporting the valley's ranching economy. Landowners who have grass to share, or have a high elk tolerance, provide livestock grazing opportunities for ranchers whose pastures are hard hit by the foraging ungulates.

FWP Foundation dollars go beyond wildlife and wild country. They helped fund the stabilization and re-roofing of the Meade Hotel, the centerpiece of Montana's first territorial capital, Bannack, and now a popular ghost town and state park. The foundation also acts as a repository for funds raised through the state parks specialty license plate program. In addition, it holds dollars raised for TIP-MONT, an FWP program that offers rewards for information resulting in the capture of poachers and others who illegally degrade Montana's natural, historic, or cultural resources.

Another foundation responsibility is managing the Montana Fish and Wildlife Conservation Trust. In 1998, federal legislation allowed 265 cabin owners leasing recreation

BEAR BUILDING Tim Manley, FWP grizzly bear specialist, fits a sedated female grizzly with a GPS collar. This was the first bear to be moved to the Cabinet Mountains in a grizzly augmentation project funded by the FWP Foundation. The project has since transported another grizzly to the Cabinet-Yaak Ecosystem. Below: The FWP Foundation also paid to put a new roof on the historic Meade Hotel at Bannack State Park.

TIM CADY

lots at Canyon Ferry Reservoir near Helena to purchase their property from the Bureau of Reclamation. Ninety percent of the proceeds were deposited into the conservation trust. Funds are used to support work by conservation groups for restoring fish and wildlife habitat and acquiring public land access for hunting and fishing.

Hegstad says the FWP Foundation monitored the sale of the cabin sites (completed in 2005) and is now responsible for investing the proceeds and disbursing the funds. Projects funded by the Fish and Wildlife Conservation Trust are recommended by a joint state-federal advisory board after consulting with a citizen advisory group and other members of the public. The trust has provided more than $2 million to support projects such as one that acquired 5,548 acres of big game winteting range in the Elkhorn Mountain foothills. Another purchased 204 acres harboring 5 miles of Cedar Creek near Superior. "That's one of only four viable bull trout spawning streams in the entire middle reach of the Clark Fork River," Hegstad says. The trust also provided funding to FWP to purchase access rights and fishing access sites near Glendive and Miles City.

TEACHING CONSERVATION TO KIDS

Public conservation education is another FWP Foundation priority. The foundation is working to raise $3.6 million to complete the second phase of what is being called the Montana Wildlife Complex, in Helena. In 2000, the foundation helped raise money to build the first phase of the complex, the Wildlife Rehabilitation Center. The facility, run by FWP and located next to Spring Meadow Lake State Park, temporarily cates for orphaned, sick, and injured animals—primarily bear cubs—until they can be returned to the wild (or, for beats too habituated to humans, taken to zoos). Phase two is an education center in the historic 7,000-square-foot Stedman foundry building, which sits next to the wildlife rehab center. Now partially completed, the new facility will contain interpretive displays, classrooms, a combination theater and multipurpose toom, and a gift shop. Outside, a flowing coldwater stream and a pond will be sited next to an amphitheater. "Our goal with the education center is to teach students, residents, and tourists about Montana's diverse wildlife and habitat resources through interactive programs and hands-on learning," says Hagener, the FWP director. "But we also want visitors to realize that they are the backbone behind those resources. We need their support and input if we want to continue conserving and managing Montana's fish, wildlife, and their habitats."

BRIAN SHINN/MONTANA FWP

MONTANA FWP FOUNDATION

MANY BENEFICIARIES The foundation helps fund TIP-MONT, which encourages hunters and other citizens to report poaching. The foundation's most ambitious project is to raise $3.6 million for a new education center (artist's rendition below), next to Spring Meadow Lake State Park in Helena in the historic Stedman foundry building. "We want the new center to instill in visitors an appreciation for Montana's diverse land and water environments and the fish and wildlife that live there, says Jeff Hagener, FWP director.

Hagener's public-involvement message resonates with Earl Shetron, FWP Foundation board chairman and a former FWP commissioner. "As a foundation or an agency, we can dream big about building a premier wildlife education center, or boosting grizzly populations in the Cabinets," he says. "But the fact remains that we can't do anything without the help of conservation groups, philanthropists, and ordinary folks who care enough about Montana's resources to contribute to the cause."

MONTANA FISH, WILDLIFE & PARKS FOUNDATION

To learn more about the Montana Fish, Wildlife & Parks Foundation and its accomplishments, or to make a donation, visit mfwpfoundation.org, or call (406) 444-6759.

Northern Bluet Damselfly

(Enallagma annexum)

BY LEE LAMB

Few things gross me out. The biologist in me triggers a curiosity in rotting carcasses, gut piles, and scat of all shapes and sizes. I'm comfortable in the presence of mice, snakes, bats, and other things that typically creep people out. But I don't like bugs. Though I understand and appreciate insects' role as predators, prey, and pollinators, they give me the willies.

The exception are dragonflies and their close cousins, damselflies. I've always been attracted to watery habitats and the critters that go with them. My favorite of these insects is the northern bluet. You've likely seen this friendly blue damselfly fluttering around shorelines or resting on grasses or even on your boat or fishing rod.

Identification The male's slender, 1.5-inch-long body is turquoise blue with black bands. The top of the head, mostly black, has two blue, teardrop-shaped spots perched behind the gigantic eyes. Females, generally blue, green, or tan, have black abdomens, and the spots on the head are smaller. Two pairs of membranous wings sprout from the rear of the thorax of both sexes.

Damselflies are easily mistaken for dragonflies. Dragonflies are typically stouter and are generally stronger fliers. When at rest, the dragonfly holds its fore- and hind-wings straight out from the body like airplane wings; a damselfly holds its wings tucked tight against its body. Also, dragonfly eyes touch at the top of the head, while those of the damselfly are well separated.

Lee Lamb is a writer in Polson.

Range The northern bluet ranges across North America from Alaska and Canada south to northern Mexico and Baja. The species is absent from the southeastern United States. In Montana, northern bluets have been recorded in 35 counties scattered across the state.

Habitat The presence of damselflies at freshwater sites usually indicates clean water, abundant native vegetation, and other aspects of a healthy ecosystem. Northern bluets live in a variety of Montana landscapes, from the dry sagebrush and prairie regions to the forested mountains. Within these habitats they require quiet waterways such as lakes, ponds, marshes, and slow-flowing streams.

Breeding and life cycle The male northern bluet establishes a mating territory near water and waits for a receptive female. When she arrives, the pair perform a ritual unlike any in the animal kingdom. First, he produces sperm in the back end of his abdomen. He then deposits the sperm into an accessory organ closer to his trunk. As he clutches the female behind her head with appendages at the tip of his abdomen, she loops her abdomen forward and picks up sperm from his accessory organ. The bodies of a conjoined pair form a circle as they mate, either in flight or while perched on shoreline vegetation.

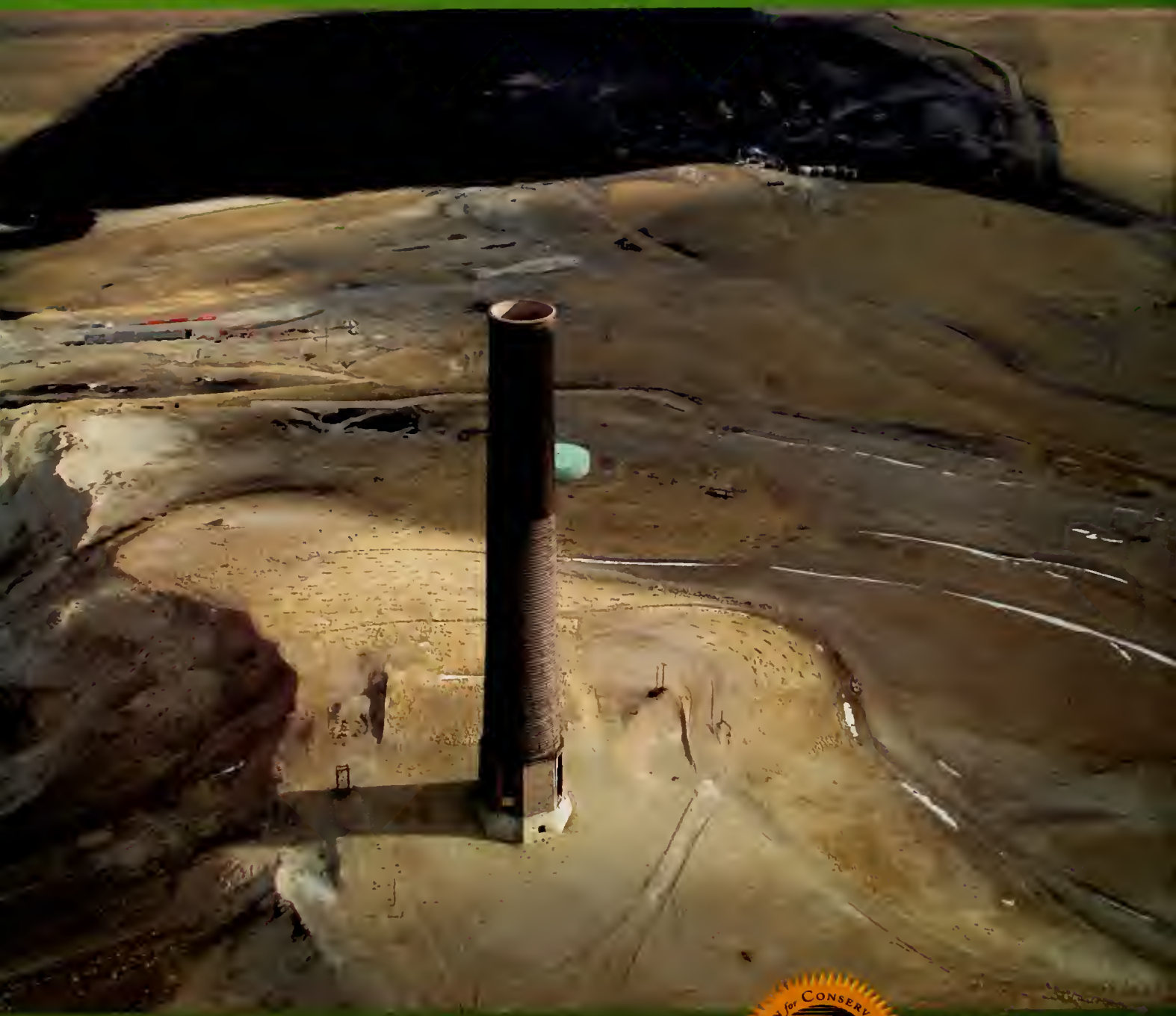
After copulation, the female cuts a slit into submerged vegetation with her mouth and lays her eggs. When the eggs hatch, the young nymphs are small but fully formed, meaning they don't go through larval or pupal stages. Damselfly nymphs are varying shades of green or tan and have a large, bulbous head perched on a long, tubular body. Three finlike gills emerge from the end of the abdomen.

Nymphs spend the winter underwater, where they molt (shed their skin) roughly one dozen times while growing. When about 1 inch long, the nymphs crawl out of the water onto rocks, sticks, grasses, or cattails and break out of their skin one last time, "hatching," or emerging, as adults. Adults typically live less than two weeks, spending their final days feeding and breeding.

Habits Northern bluets don't sting or bite humans, but they are formidable predators of other insects. The nymphs hide in underwater vegetation and ambush the larvae of smaller insects such as mosquitoes and mayflies. Large eyes and the ability to fly in any direction make adult damselflies excellent aerial hunters. They typically prey on mosquitoes, small moths, flies, and mayflies.

Status Dragonflies and damselflies have been around for 300 million years—predating dinosaurs by about 100 million years. Of the 450 species found in North America, scientists have identified more than 80 in Montana.

Northern bluets are one of the most common damselflies along Montana's streams, rivers, and other waters. Both nymphs and adults are consumed by birds, fish, frogs, and dragonflies. The damselfly hatch typically begins in late May and continues until early September. During various times of the year, when great numbers of nymphs move underwater toward shore, trout key in on these insects and feed with abandon. Fly-fishing patterns that imitate the nymphs are especially effective then.



CHAMPION CHIMNEY

Chris Boyer, of Bozeman, took this bird's-eye shot of the towering 585-foot Anaconda Smoke Stack, now part of a Montana state park, from a camera fixed to his personal aircraft. Gain a new perspective on other little-known state parks in our story on page 30.

ASSOCIATION FOR CONSERVATION INFORMATION
Best Magazine: 2005, 2006
Runner-up: 2007

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